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[AFTER reviewing the public work of the Association since it last assembled in Cardiff 43 years ago, the lecturer continued:—]

ANCIENT CYMRIC MEDICINE.

Casting back to more distant times, the exhibit which, by the courtesy of the authorities, has been set up in the Library of the National Museum shows, I think, that "Antient Cymric" medicine affords a most attractive field for study and research, and I am indebted to my friend Dr. Roland Williams for many interesting observations and gleanings in this connexion.

Handed down from very remote times, a glimmering of medical science would seem to have existed in pre-Celtic and Celtic Britain. It is difficult to conceive, for instance, that the new Stone Age and the Bronze Age, rich as they were in the pioneer achievements of civilisation, should have been lacking entirely in some form of indigenous medical lore. Possibly, too, those very early traders from the older Mediterranean civilisations who came to seek tin from Cornwall left behind them something of the healing traditions of other lands. At any rate, however such knowledge may have accrued, there are some grounds for crediting the Druids with perhaps a greater preoccupation with medicine than was usual in a primitive priestcraft. The Greek geographer Strabo (born about 60 B.C.) has left it on record that the "soothsayers are sacrificers and physiologists; the Druids, in addition to physiology, practise ethic philosophy." Pliny gave a brief account of a Druidic *Materia Medica* in which the mistletoe or "All-Heal" was held in highest esteem. Presumably, too, the British Druids were similar in type to the Druids of Gaul, to whose advanced "knowledge of the Laws of Nature" Cicero referred. It is interesting to note that, as preventives to ill health, the Druids prescribed *cheerfulness, temperance, exercise, and early rising*, qualities and practices which—shall we say?—have remained characteristics of the Cymry to the present day. Albeit, another of the Druidical maxims, asserting that "Money lent in this world will be repaid in the next," would not, I fear, in practice to-day, rank as a gilt-edged security.

After the Druids came the Romans. Soldiers, engineers, administrators as they were in the main, we do not know what legacy they left behind them towards the building up of a native medical tradition in Wales, but it is legitimate to surmise that at least some elements of the lore of Hippocrates and the great Greek medical tradition may have made its way into Britain with the legions, and, once implanted there, may have lingered, as the *language* of the legionaries lingered after their departure, in Cornwall, in Cumberland, and in Wales. It is a significant fact that the modern Welsh word for a physician, the word *meddyg*, goes back directly to Roman times, being derived from the Latin *medicus*, and occurring first in its Welsh form in the old Cornish vocabularies.

After Rome, the welter of the Dark Ages—a period dark to the historian everywhere in Europe, but darkened still more in Wales owing to the distrust to which many of the manuscripts relating to the period are subject. Not until the beginning of the tenth century and the codification of Welsh Tribal Law about that time do we come upon reliable information regarding the profession of medicine.

A thousand years ago King Hywel the Good caused the laws of Wales to be codified, and it is in these codes that we get the first authentic glimpses of our profession and the manner of men who practised it in tenth-century Wales. This monarch had a court physician who was given place and prestige in his presence, had a grant of free land and a horse, and received his linen clothing from the Queen and his woollen clothing from the King. His seat in the hall within the palace was at the base of a pillar near to the King, and his lodging was with the chief of the household. It was his duty to administer medicine without charge to all within the palace, and to the chief of the household. It would appear that he was a whole-time officer, with intervals when, on the basis of a moderate tariff, he was allowed to enjoy the stimulating freedom of private practice. He had to accompany the armies, but ordinarily he was never to leave the palace without the King's permission, when he was free to take any road or route with the messenger of the sick. In those days it was lawful for anyone to take another's horse to procure a medical man for a person in danger, without being required to make amends. The same principle applied to-day in respect to motor-cars might lead to serious misunderstandings.

The chief interests of these early codes, from a medical point of view, lies in the way they assessed legal damages for injuries and laid down standard fees for treatment. The thumbnail, for instance, was worth 30 pence. One front tooth was equal to a finger; one molar tooth to a thumb.

MEDIÆVAL TRADITIONS.

The old laws are interesting as showing us something of the state of the Welsh *meddyg* under the Welsh tribal system in the tenth century. The eleventh century brought with it great changes in Welsh history. A great new formative influence came then into the life of Wales—that was the Norman. The Norman affected profoundly the whole course of Welsh life and politics. Under the walls of his castles there grew up townships, markets, forts. Once more, as in the days of the early wandering Celtic missionaries, Wales came into touch with the rest of Europe and the world. For not in Wales and England only, but in Ireland, in France, in Spain, in Sicily, in Palestine even, on the threshold of immemorial East—there too were the castles of the Norman. Pilgrim and Crusader, merchant, monk and friar, errant knight and troubadour, all whose activities helped to render knowledge fluid and international throughout the Holy Roman Empire, must have helped towards the building up of a native medical tradition in mediæval Wales, a tradition which has left behind as its monument a fourteenth century manuscript, the older of the two manuscripts known as the "Books of the Physicians of the Myddfai."

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Casting back to more distant times, the exhibit which, by the courtesy of the authorities, has been set up in the Library of the National Museum shows, I think, that "Antient Cymric" medicine affords a most attractive field for study and research, and I am indebted to my friend Dr. Roland Williams for many interesting observations and gleanings in this connexion.

Handed down from very remote times, a glimmering of medical science would seem to have existed in pre-Celtic and Celtic Britain. It is difficult to conceive, for instance, that the new Stone Age and the Bronze Age, rich as they were in the pioneer achievements of civilisation, should have been lacking entirely in some form of indigenous medical lore. Possibly, too, those very early traders from the older Mediterranean civilisations who came to seek tin from Cornwall left behind them something of the healing traditions of other lands. At any rate, however such knowledge may have accrued, there are some grounds for crediting the Druids with perhaps a greater preoccupation with medicine than was usual in a primitive priestcraft. The Greek geographer Strabo (born about 60 B.C.) has left it on record that the "soothsayers are sacrificers and physiologists; the Druids, in addition to physiology, practise ethic philosophy." Pliny gave a brief account of a Druidic *Materia Medica* in which the mistletoe or "All-Heal" was held in highest esteem. Presumably, too, the British Druids were similar in type to the Druids of Gaul, to whose advanced "knowledge of the Laws of Nature" Cicero referred. It is interesting to note that, as preventives to ill health, the Druids prescribed *cheerfulness, temperance, exercise, and early rising*, qualities and practices which—shall we say?—have remained characteristics of the Cymry to the present day. Albeit, another of the Druidical maxims, asserting that "Money lent in this world will be repaid in the next," would not, I fear, in practice to-day, rank as a gilt-edged security.

After the Druids came the Romans. Soldiers, engineers, administrators as they were in the main, we do not know what legacy they left behind them towards the building up of a native medical tradition in Wales, but it is legitimate to surmise that at least some elements of the lore of Hippocrates and the great Greek medical tradition may have made its way into Britain with the legions, and, once implanted there, may have lingered, as the *language* of the legionaries lingered after their departure, in Cornwall, in Cumberland, and in Wales. It is a significant fact that the modern Welsh word for a physician, the word *meddyg*, goes back directly to Roman times, being derived from the Latin *medicus*, and occurring first in its Welsh form in the old Cornish vocabularies.

After Rome, the welter of the Dark Ages—a period dark to the historian everywhere in Europe, but darkened still more in Wales owing to the distrust to which many of the manuscripts relating to the period are subject. Not until the beginning of the tenth century and the codification of Welsh Tribal Law about that time do we come upon reliable information regarding the profession of medicine.

A thousand years ago King Hywel the Good caused the laws of Wales to be codified, and it is in these codes that we get the first authentic glimpses of our profession and the manner of men who practised it in tenth-century Wales. This monarch had a court physician who was given place and prestige in his presence, had a grant of free land and a horse, and received his linen clothing from the Queen and his woollen clothing from the King. His seat in the hall within the palace was at the base of a pillar near to the King, and his lodging was with the chief of the household. It was his duty to administer medicine without charge to all within the palace, and to the chief of the household. It would appear that he was a whole-time officer, with intervals when, on the basis of a moderate tariff, he was allowed to enjoy the stimulating freedom of private practice. He had to accompany the armies, but ordinarily he was never to leave the palace without the King's permission, when he was free to take any road or route with the messenger of the sick. In those days it was lawful for anyone to take another's horse to procure a medical man for a person in danger, without being required to make amends. The same principle applied to-day in respect to motor-cars might lead to serious misunderstandings.

The chief interests of these early codes, from a medical point of view, lies in the way they assessed legal damages for injuries and laid down standard fees for treatment. The thumbnail, for instance, was worth 30 pence. One front tooth was equal to a finger; one molar tooth to a thumb.

MEDIÆVAL TRADITIONS.

The old laws are interesting as showing us something of the state of the Welsh *meddyg* under the Welsh tribal system in the tenth century. The eleventh century brought with it great changes in Welsh history. A great new formative influence came then into the life of Wales—that was the Norman. The Norman affected profoundly the whole course of Welsh life and politics. Under the walls of his castles there grew up townships, markets, forts. Once more, as in the days of the early wandering Celtic missionaries, Wales came into touch with the rest of Europe and the world. For not in Wales and England only, but in Ireland, in France, in Spain, in Sicily, in Palestine even, on the threshold of immemorial East—there too were the castles of the Norman. Pilgrim and Crusader, merchant, monk and friar, errant knight and troubadour, all whose activities helped to render knowledge fluid and international throughout the Holy Roman Empire, must have helped towards the building up of a native medical tradition in mediæval Wales, a tradition which has left behind as its monument a fourteenth century manuscript, the older of the two manuscripts known as the "Books of the Physicians of the Myddfai."

It was but natural that the tradition of the physicians of the Myddfai in mediæval Wales should trace its origin back to the fountain head of a legend.

In the fastnesses of the wild Fan Mountains of Carmarthenshire there is hidden away a small lake known as Llyn-y-Fan Fash. Long ago, so the legend runs, a shepherd boy named Gwyn was tending his flock on the shore of the lake when a most beautiful maiden emerged from the mirrored surface of the water. After many complications, which are so essential to a fairy tale, Gwyn and the maiden of the lake became man and wife. Three sons were born to them, but after a time the maiden disappeared again into the depths of the lake, taking with her her faery dowry of cattle and chattels. At a later day, however, she reappeared to her three sons, who kept vigil for her on the shore. The eldest son, Rhiwallon, she led aside to Pant-y-Meddygon (the Physicians' Hollow); there she revealed to him the properties of the medicinal plants and herbs which grew around them,

and called upon him to dedicate himself to the art of healing. This Rhiwallon did, so that he became the physician to Rhys Grug, Lord of Llandovery and Dynevor. Tradition claims, too, that the descendants of Rhiwallon practised their art at Myddfai in unbroken lineage until the end of the eighteenth century.

Such, in brief, is the story of the physicians of Myddfai.

Interesting though these earlier figures may be, however, it is only after the Renaissance had rejuvenated Wales that we come upon the beginnings of a really brood-culture among Welsh physicians. Although not one of the outstanding physicians of Wales in Tudor and early Jacobean times had any claim to be compared to a Sydenham or a Harvey, they were yet figures commanding interest and respect in other ways. Educated, most of them that we know of, at the older English universities, their medical writings and their medical beliefs were, for their day and generation, reasonable and scientific. One striking characteristic which many of them had in common was the great breadth of their culture and their scholarly achievements in other arts besides medicine. Thus Phaer of Pilgeiran was one of the first great Elizabethan translators of the classics, while to Robert Recorde of Tenby we owe the introduction of the study of algebra into this country.

Time does not permit to follow the fortunes of the Welsh *meddyg* through the seventeenth and eighteenth centuries. Something of their ubiquity and prominence may be gathered from the fact that the two surgeons on board Captain Cook's ship the *Resolution* in 1777 were Welshmen—Robert Davies of Wyddgrug, and David Samuel of Denbigh. Samuel later became surgeon of the *Discovery*, and he may have suggested to his captain some of the latter's very enlightened ideas regarding the relationship of scurvy to diet. At any rate, Samuel was a scientifically minded man, as shown by his treatise on the introduction of certain diseases among the South Sea Islanders. "He was," so wrote one of his contemporaries, "extremely irritable, but one of those hearty fellows we expect a sailor to have been."

But however true it may be that the past, even the distant past, is ever with us and must tincture our every thought and deed, the blend of the present and the immediate future is the main incentive to individual and corporate action.

Health Organisation in Recent Times.

The population of the world to-day is many times greater than it was a thousand years ago, and over the average of years Mother Earth shows no signs of failing to respond to the food and other requirements of her increased family of humans. Correspondingly, however, much more work has to be done by these humans in order to extract and prepare these requirements. Effective work involves a sufficient measure of health, and hence, perhaps, one factor at least of the instinctively higher regard for the health of the individual and of the community which is so marked a social feature of the day.

The demand is insistent, and from the nature of the case the supply can never wholly meet it. But quite wonderful achievements have been registered by organisation and scientific discovery. At the same time those who know must know how much more remains to be done.

A sign of the time, that enactment of outstanding importance, the National Health Insurance Act, 1911, which provides domiciliary medical attendance for, say, 16 million of the 45 million of the population, has profoundly modified and to a significant extent refocused the conditions of the great bulk of medical practice in this country.

Piloted with great ability and energy through a half-reluctant House of Commons by Mr. Lloyd George, the then Chancellor of the Exchequer, menaced by vested and otherwise disturbed interests, this colossal measure came into operation in the early days of January, 1913. The unavoidably complex machinery of so far-reaching an Act was but as yet in the stage of graduating through the inevitable jolts and jars when the cataclysm of the great war and the disabilities of demobilisation intervened as a further strain on administration.

It says much for the administrative staff and even more for the 15,000 medical practitioners accepting service under the Act that, as set forth in the Memorandum of Evidence submitted by the British Medical Association to the Royal Commission on National Health Insurance, both the Representative Body of the Association and the Conference of Representatives of Local Medical and Panel Committees agreed "that the measure of success which had attended the experiment of providing medical benefit under the National Health Insurance Acts system has been sufficient to justify the profession in uniting to ensure the continuance and improvement of an insurance system."

It is demonstrable that insured persons under the Act, taken as a whole, are provided with a better grade of medical service than were their equivalents before its inception. But of the making of regulations there is no end, and the officials concerned, and certainly the busy practitioner, may well be forgiven if, on occasion, a lapse of memory leads to executive error. It would be a real boon to the insurance practitioners, to the officials, and to the insured persons, and would prevent many mistakes and misunderstandings, if someone—it would admittedly require little short of a genius—would intelligibly collate the multitude of regulations.

Under the Act as it stands much more could have been done, and should be done, in the matter of wise propaganda directed to the means of preserving health and of preventing disease; but, taking the Act in general, with its many inherent administrative difficulties, it can be said that the major provisions are being sympathetically and effectively implemented. But the degree of success so far attained in itself calls for further and fuller developments, which in due course should be equally available for all insured persons regardless of their membership of any particular society.

Such further provisions should include complete consultant and specialist advice and treatment, and, under conditions, nursing and massage. Various salient advances by some of the approved societies have already been made into the region of these developments, notably in the form of dental, ophthalmic, or institutional extra benefits, and the experience and results accruing will, doubtless, ultimately encourage an advancement of the line, as indicated in recent enactments by Parliament.

In such logical and, indeed, inevitable developments of the health insurance scheme, stage by stage being added after full consideration of the reasonable interests of those concerned, I for one fail to see the risk of any sudden ultimate transmutation to a whole-time State medical service, with its connoted and handicapping officialism and sacrifice of personal freedom.

[At this point the lecturer briefly surveyed the advances of medicine and surgery since the Association last assembled in Cardiff. On the crest of the wave of recent years, he said, ride prominently the bacteriological and biochemical discoveries, the latter even overshadowing the former, as witness the new science of the endocrines, the chemistry of body fluids, the functions of organs as expressed in their influence on the composition of the blood—for example, liver, spleen, and, lastly, the vitamins. Such a recital, he remarked, provokes the reflection that if one of the old alchemists came to life in our midst to-day, after the manner of Rip van Winkle, in all else but technique and terminology he might find himself very much at home. The lecturer then went on to deal with certain developments in present-day practice.]

Maternal Mortality.

It has been urged, and with truth, that one of the most vitally important branches of medical practice—obstetrics—has not shared in due proportion the benefits accruing from the Listerian epoch with regard to the incidence of infection. Many persons, and many interested bodies, including the Ministry of Health and our Association, have been, in their several spheres, devoting time and earnest attention to the problem, and it is of the first importance that Her Majesty the Queen has personally associated herself with the movement to adequately investigate the governing causes and to endeavour to reduce the maternal mortality and morbidity rates.

No further incentive to this end need be furnished than the oft-quoted facts that more than 3000 mothers lose their lives every year in England and Wales; that in more than half of this number death is due to septic infection which, it is claimed, is, or should be, a preventable condition. Preventable, yes, given certain conditions. It is well known that under properly conducted institutional conditions mortal septic infection arising de novo is reducible to vanishing point. In these establishments the observance of every detail and circumstance of technique designed to secure asepsis can be carried out, and a confidence generated akin to that with which surgery in general is now undertaken.

Inasmuch as, in a country like ours, all cases, or any very considerable proportion of them, cannot be institutionally provided for—the total in England and Wales would require something like 30,000 beds—the problem would appear to be capable of solution if it were possible to reproduce in the homes of the people the essential factors of this provedly effective hospital treatment. This deduction loses little of its force even if it be urged, as with truth it may, that on the one hand there are some rapidly fatal cases of infection in which every known precaution has been taken, and, on the other hand, that some difficult and complicated cases, in the circumstances of which practically no precautions can be observed, may make a smooth recovery. Such cases are the exception and not the rule.

To reproduce, however, in the average home that veritable Temple of Asepsis the operating theatre, with its ministering priests and priestesses, is, of course, impossible. But to be effective the ritual need not be complicated, and the association of antenatal care and, if necessary, treatment; the adequate nursing; the unhurried waiting upon events in suitable cases; and the availability of skilled experience of all kinds if and when required, are equally indispensable elements in the right kind of institutional treatment. There are thousands of general practitioners who, in letter and in spirit and wherever possible, transmute the largest common denominator of these hospital advantages into their practices, and their results attest the fact.

Every practitioner, however, and especially in certain districts, must not rarely encounter such conditions of poverty, ill-housing, previous unskilled interference, and other handicapping circumstances, as render it impossible to practise asepsis, and where accordingly the pathways to infection are hopelessly unguarded. It is gratifying to note that several local authorities are doing much to meet the circumstances of many who cannot afford even a very inexpensive equipment—the maternity benefit notwithstanding—and that the sequel is encouraging.

It is much to be hoped that at no distant date the recommendations submitted by the Association to the Royal Commission on the Insurance Act in regard to this supremely important branch of medical practice will be materialised.

Meanwhile the tendency exhibited in certain quarters to make the general practitioner the scapegoat for the sins of many is to be deprecated. To begin with, he cannot be sent into the wilderness. In his hands, either in the original charge or as a consultant of first instance, must lie the application of the standard obstetrical practice of the day for the great bulk of domiciliary cases. He needs, not blame, but support in the form of the provision of facilities in suitable cases to cope with this most anxious, time-absorbing, underpaid factor of his work. As it is, his devoted response to its calls in most difficult circumstances is worthy of all praise.

There are many aspects of this international problem which are baffling, and one cannot but earnestly hope that the intensified research which is now being directed not only into its bacteriology but also into the question as to the factors which constitute and the conditions which vary resistance to infection, may produce helpful light and leading.

International Coöperation.

This and many other important topics of international concern are engaging the close attention of the appropriate departments of our annual meeting. Indeed, we are, by the presence with us on this occasion of so many distinguished representatives of other countries and other climes—whom we are delighted to have the privilege of greeting—strikingly reminded of the cosmopolitan character of the science and art of medicine. Orthodox medicine knows no protection barriers and claims no patent rights. The international pooling of ideas, of discoveries, and of experiences is essential to the recognition of even a datum line of the advances in the various departments.

There is an impression abroad—and it is not, perhaps, ill-founded—that in the British Isles we do not sufficiently organise and utilise the wealth of clinical material at our disposal for post-graduate demonstration in the interests of our home profession and of visitors from other countries. Good work has been and is being done in the various metropolitan centres, but these do not claim a monopoly of skill and clinical facilities. I have long felt that, with its wonderfully ramified machinery to link up the provinces and the capital, the rural areas and the towns, no body is so well adapted as our Association to organise a post-graduate system embracing existing institutions and developing many new centres, on a scale worthy of this country.

I am not without hope that there may be forthcoming a national, nay, an international, benefactor willing to entrust the Association, as a voluntary body, with the considerable sum of money necessary to establish and conduct such a system. I am convinced that thus we would not only raise the standard of efficiency, and therefore of health, in this land, but colleagues from overseas and other lands would find it more than ever worth their while to spend some time with us, to our mutual benefit. The advantages would not be limited to our professional spheres, but would surely develop in wider measure social and ethical results of far-reaching significance.

No branch of the League of Nations exerts a wider general influence than the Health Organisation, the head of which, Dr. Rajchman, we are so glad to have with us. That influence is not accidental. It is essential. For may we not, in all humility, venture to claim that no other profession or calling can offer a basis of union so broadly appealing to what is common to mankind as the objective of preventing, alleviating, and curing the diseases of humanity?

A Government Hospital in Liberia.—Mr. King, the President of Liberia, the Negro Republic on the West African coast between Sierra Leone and the French colony on the Ivory Coast, recently opened a Government hospital at Mourovia, the capital. It stands high, is built of stone and concrete, and encircled by wide-covered verandahs. There are 200 beds in small wards and single and double rooms; there are maternity and contagious diseases wards and a pavilion for patients awaiting admission. The hospital is open to patients of any race or colour, and the medical staff is composed of two Europeans and a Liberian, all of whom have been trained in Europe and the United States, and are specialists in tropical diseases. The nurses have been trained in America.

PUBLIC ACTION IN REGARD TO CANCER.*

By Sir GEORGE S. BUCHANAN, C.B., M.D., F.R.C.P. Lond.,

SENIOR MEDICAL OFFICER, MINISTRY OF HEALTH, AND PRESIDENT OF THE CANCER COMMISSION OF THE HEALTH COMMITTEE OF THE LEAGUE OF NATIONS.

WE are invited to-day to consider "public action" designed to reduce, in our time, the suffering produced by an ever-threatening disease, to cure it when it can be cured, and, last but not least, to prevent it where knowledge and means are at hand for its prevention. And "public action" for this purpose may be taken to cover every form of collective public effort, whether taken voluntarily, by groups of citizens acting independently of any State medical system, or organised by central or local government authorities out of rates and taxes.

A review of public action, thus conceived, if it were to be just and to take account of the different lines of effort followed in the many countries represented at this Conference, would be a task which is, historically and administratively, far outside my own competence. My best course, I think, will be merely to say a few words as regards this country, and to point to a few of the more recent illustrations which it affords of the benefit which collective action can secure. I will then invite those who come from other lands and work under other conditions of medical practice and public health administration to give us their experience of their own lines of work and help us with support or guidance.

Increasing Recorded Mortality-rate.

For England and Wales, then—from my official limitations I find it easier to deal with this part of the United Kingdom, leaving Scotland and Northern Ireland to their own exponents—I may start by referring to the way in which, in recent years, attention has been directed to the steadily increasing recorded mortality-rate from cancer—a feature which differentiates it from practically all other causes of mortality. It is unnecessary to assume that this recorded increase denotes a corresponding increase in the real incidence of the disease, since it is well known that other factors, such as average increase in longevity, improvement in diagnosis, and improvement in death certification, must all be reflected in the mounting annual figures. Nor will it be forgotten that this over-all increase comprises increases at certain sites of the disease, decreases at others.

But yet consider the following death-rates per million living in England and Wales during the period 1847–1927:—

Certified Deaths per Million from Cancer in England and Wales, 1847–1927.

1847–50 ..	274	1886–90 ..	632	1921 ..	1215
1851–55 ..	306	1891–95 ..	712	1922 ..	1229
1856–60 ..	327	1896–1900 ..	800	1923 ..	1267
1861–65 ..	367	1901–05 ..	867	1924 ..	1297
1866–70 ..	403	1906–10 ..	939	1925 ..	1336
1871–75 ..	445	1911–15* ..	1055	1926 ..	1362
1876–80 ..	494	1916–20* ..	1182	1927 ..	1376
1881–85 ..	548	1921–25 ..	1269		

* The mortality for the years 1915–20 relates to civilians only.

Before we write off all this rise as a product of more accurate diagnosis and certification of causes of death, or as due to the steady prolongation of lives into the ages most prone to die of cancer, we must remember the causes which all through this long period have been doing their best, and potently, to produce a fall—vastly improved surgery, anæsthetics, asepsis, new pathology, better medical education, research, and devoted medical work at every stage. Cancer patients have shared with others the benefits of the great developments in the voluntary hospitals, in the poor-law medical service, and in other methods of caring for the sick, which during this time have changed almost beyond recognition. Nevertheless, if all these things have stemmed the tide, the flow continues. It is small wonder, therefore, that in these later and post-war years, when so much attention is being given to the prevention of disease and the reduction of sickness, a desire has arisen in many quarters to see what may be called normal medical effort strengthened by special collective action.

Special Collective Action.

Until lately only a few examples of such special collective action came readily to mind, although they were important ones. There was in particular the foundation of three special cancer hospitals. The primary object of these hospitals, the Cancer Charity of the Middlesex Hospital, founded 1792 (now the Middlesex Cancer Hospital), the Cancer Hospital, established 1851, and the Christie Hospital, Manchester, established 1892, was doubtless that of providing institutional treatment for incurable cases, but each of them has widened its scope, and now treats patients in all stages of the disease, and possesses a modern research department. Then there was the Imperial Cancer Research Laboratory which began with the Cancer Research Fund, now the Imperial Cancer Research Fund, established through private munificence in London in 1902 (under the patronage of H.M. the King) and placed under the direction of the Royal Colleges of Physicians and Surgeons, whose work is known to you all. I should mention also the Radium Institutes in London (1911) and Manchester (1915) which, though also undertaking the treatment of other conditions, are mainly concerned with neoplasia. All the special institutions just mentioned owe their foundation, and in some cases their daily maintenance, to private generosity; they are in no sense State or municipal organisations.

Among the studies of cancer made for the State during the period are, of course, the well-known reports from the Registrar-General's Department, in which the mortality from cancer as a whole and its specified varieties, as judged from certification of causes of death, has been regularly collected and reviewed, annually and decennially, and all the work directly or indirectly bearing on cancer which has depended on the Medical Research Council, and is equally well known to you.

Among instances of State intervention for the control of cancer was the action taken in November, 1919, when by an Order of the Secretary of State for Home Affairs (under Section 73 of the Factory and Workshops Act, 1901), epitheliomatous ulceration due to tar, pitch, bitumen, mineral oil, or any compound, product, or residue of these substances contracted in a factory or workshop was scheduled as a disease the notification of which was obligatory on medical practitioners. In one sense the action was merely part of the normal procedure adopted in the prevention of a disease liable to be caused by occupation, but its value, for a wider purpose, should not be ignored. Lessons learnt in the investigation of cancer caused by occupational risks may have an important bearing upon the elucidation of the nature of cancer in general.

Another step of importance was the handing over to the Medical Research Council, after the war, of a considerable stock of radium in the possession of the Government. This stock has been distributed to selected hospitals and used largely for treatment of cancer, always under the condition that its use is part of research and that the results should be reported to and considered by the Council, with the aid of its Radiology Committee.

Four Recent Directions of Activity.

I come now to certain forms of public action which are of more recent date.

(1) About the end of 1922 the Minister of Health decided to appoint a Departmental Committee "to consider available information with regard to the

* Opening a discussion on the subject at the International Cancer Conference on July 20th.

causation, prevalence, and treatment of cancer, and to advise as to the best method of utilising the resources of the Ministry for the study and investigations of these problems." The chairman of the committee is the Chief Medical Officer of the Ministry, and its members include members of the medical profession with expert knowlegde of the disease in its various aspects — experimental, pathological, surgical, medical, statistical, &c.

(2) Following some interesting discussions on the comparative incidence of cancer mortality at the Office International d'Hygiène Publique (October, 1922), the League of Nations Health Committee decided, in 1923, to set up a Cancer Commission, the work of which, so far as the participation of England and Wales is concerned, has since been carried out in close association with the Departmental Committee.

(3) In 1923, also, the British Empire Cancer Campaign was started—a voluntary organisation with its centre in London, the object of which is "to correlate and extend all existing efforts in fighting cancer." The direction of the campaign is in the hands of a body of distinguished men, both lay and medical, and its principal activity, besides the coördinating work, is that of collection and disbursement of funds for promoting research into the causes and cure of cancer.

(4) During the last four or five years some of the larger municipalities have given considerable attention to the subject of cancer, especially those cities which are centres of medical education or well supplied with hospitals. The Departmental Committee above referred to has secured some coördination of this local work by forming a subcommittee, consisting of medical officers of health of the areas in question, which meets from time to time at the Ministry of Health.

(1) Departmental Committee of the Ministry of Health.

I hope to be forgiven for dwelling at disproportionate length on the work done at the Ministry of Health under the guidance of the Departmental Committee, merely because it happens to be well known to me. The standing problem which we then have before us is whether available skill and existing knowledge are, at the present time and with present weapons, being given all the chance to reduce mortality or relieve suffering that they ought to have. For example, does the obstacle lie in the absence of sufficient public propaganda in favour of early diagnosis and treatment, or in the faults of misdirected propaganda, badly conceived and based on half truths? If so, what is good, safe, and effective propaganda? Are cancer patients now presenting themselves for advice, but failing to get it? Is there doubt whether surgery or radiology do produce the results so often claimed for them, and how far is that doubt justified by the facts? Is the main difficulty one of getting sufficient facilities for early surgical or radiological treatment; are there, in fact, long waiting-lists of patients; and what should be done about it? Do we know enough of the conditions of incurable and inoperable cases, and are they alleviated as much as they could be? Finally, is there anything useful to be said as regards the way in which conditions which lead to cancer can be avoided? What do we really know about such conditions; are they as a practical matter avoidable; and if so, in what way?

Now the information needed to resolve these questions is not of the type which can usually be obtained by cancer research workers, whether in laboratories or the wards of hospitals. It demands the laborious collection and scientific statistical analysis of massed data regarding the conditions associated with the onset of cancer, the effects of various methods of treatment, and many other investigations for which it is almost essential that the resources of the central health authority should be added to those of other investigators. Work in these directions, moreover, requires that national experience as a whole should be checked and compared at different stages with that of particular local areas on the one hand and with that of different countries on the other. The Departmental Committee has endeavoured to secure both by the liaison systems I have mentioned, through its Medical Officer of Health Subcommittee, and through its representation on the League of Nations Cancer Commission respectively.

Data for Cancer of the Breast and Surgical Results.

The work alluded to has so far been chiefly concerned with the disease at the three sites—breast, uterus, and rectum. In the case of cancer of the breast a statistical analysis undertaken of published literature and of the clinical records of hospitals established on a broad basis the fact that operative treatment (by which is to be understood the complete operation) results in the survival for long periods—ten years—of as many as 80–90 per cent. of patients if they submit to operation at an early stage of the disease—i.e., before it has spread beyond the confines of the breast. Once the disease has spread beyond the breast the chance of prolonged survival diminishes rapidly. In both categories the analysis made did more than confirm an opinion long held by surgeons; it brought the facts into terms capable of precise expression and established a firm basis on which the medical profession and the public are safe in acting. There is, moreover, no escape from the practical conclusion; without any extension or alteration of existing facilities for diagnosis or treatment a very large number of the lives now lost from this cause could be saved if a larger proportion of patients were submitted to operation in an early stage of the disease. Using data which permitted lessons to be drawn from average figures, it was found that an average interval of some nine months is allowed to elapse between the patient noticing the abnormal condition and seeking treatment. While it is not possible to state an average period necessary for spread of the disease to the axillary glands, in a large proportion of patients these glands are affected within six or seven months of the onset, as observed by the patient.

It is not too much to say that this demonstration that early operation affects such an overwhelming proportion of cures (for absence of recurrence after ten years can usually be regarded as a cure) surprised many surgeons. The figures seemed too good as an index of the average results obtained by surgeons in general. But the conclusions of the Committee have been strengthened by a later analysis of a still larger sample of English hospital cases in a report not yet published. In this later analysis the results after operation were also correlated with the microscopical characters of the growth. Though there was evidence that the glandular and colloid varieties had a higher survival rate than the spheroidal-celled growths there was no evidence in the latter that the more cellular growths had a worse prognosis. It was also found, contrary to the general impression, that risks of recurrence are not appreciably greater in younger than in older patients. In all cases the most important factor in prolonged survival is the stage of the disease at which appropriate treatment is applied. And in all cases the hopeful method, at present, of reducing mortality is to find some means of inducing women with an abnormal condition of the breast to seek treatment as soon as any abnormality manifests itself.

The analysis has also enabled the factors which have been thought to be of importance as predisposing causes to be sorted out and their influence statistically assessed—e.g., infertility, injury, chronic mastitis, and transient non-suppurative mastitis—matters in which it has now proved that the experience of certain foreign countries is closely parallel to that of England.

"Natural Duration."

The Committee at an early stage found that they needed another piece of knowledge—namely, the average interval between the onset of the disease, as observed by the patient, and the fatal termination in those cases where for one reason or another no attempt at radical treatment had been made—i.e.,

an average figure representing the so-called "natural duration" of the disease.

Earlier observations had shown that "natural duration" varied considerably with the organ affected. It had long been recognised that, especially in the breast, the course of the untreated disease might be extremely protracted, occasionally to 20 years or more, and it was also known that some cases ran an unusually rapid course. But the large series of observations collected for the Committee have enabled a useful series of average "natural durations" to be estimated on a large numerical basis. For some of the commonest accessible sites they are as follows:—

Breast	38 months.	Tongue and mouth	16 months.
Uterus	20 "	Larynx	14 "
Rectum	26 "	Œsophagus	12 "

Data for Cancer of the Uterus; Alternatives to Surgical Treatment.

Turning now to the site next investigated—the uterus—it may be said briefly that much the same principal deduction from the public health standpoint emerged—viz., that the earlier the disease was surgically treated the better was the result. Moreover, similar conditions prevailed in respect of delay in seeking treatment, the average interval in this case being somewhat shorter than in the case of the breast. This presumably is to be correlated with the shorter natural duration.

But for cancer of the cervix uteri an entirely different factor came into the field of investigation—viz., the alternative method of treatment by radiology—necessitating a comparison of its results with those of surgery. Broadly it appeared that in operable cases the percentage of survivals to five years might be approximately the same for both kinds of treatment—viz., 40. Additionally, of those patients who were beyond the reach of surgery some 10–12 per cent. were freed of their disease for the same period by radiological methods. When it is remembered further that these results of radiology are obtained at practically no immediate risk of death and that in more advanced cases still, where eradication of the disease seems out of the question, considerable alleviation of symptoms can be secured, it becomes clear that at this site we have a method of treatment equal if not superior to surgery.

From the public health standpoint another aspect should be mentioned. It seems probable that, with wider use of a method of treatment less repugnant to most women than operation, one of the probable reasons for delay in seeking treatment may be eliminated and opportunities for securing a larger proportion of survivals improved.

If this attitude towards the treatment of cancer of the cervix is broadly true it gives a different orientation to the subject and brings it much more closely into the sphere of "public action." One has only to consider the cost and special nature of radium, the complexity and delicacy of deep X ray apparatus, and the specialised skill needed for its application. A greater degree of organised centralisation for radiological treatment becomes inevitable if radiological treatment is to effect the great benefit and life saving which it can apparently produce.

Data for Cancer of the Rectum.

With the aid of the Departmental Committee the Ministry of Health has also undertaken an investigation of the literature relating to the surgical treatment of rectal cancer. This proved more difficult and in some ways less conclusive than those into cancer of the breast. The operative treatment was more recent and less standardised, a greater number of variable factors to be taken into consideration, while in this case there is greater difficulty of diagnosis and greater inaccessibility of the growth. Though the operative mortality was high (about 16 per cent.) the proportion of survivals to three years amounted to nearly 40 per cent. Here also the average delay between the onset of symptoms and seeking treatment was serious, extending to 13 months—an important reason for the rarity with which these cases could be regarded as operable.

Relationship of Cancer to Dietary.

A subject which has given rise to much theorising is the possible relationship of dietary to cancer. The line of thought commonly followed is that as native races, whose diet is more "natural" than that of white races, suffer from cancer to a less degree than others, the two events are probably correlated. Whether it is true that native races are less affected is really not yet known; much has been said on the subject, but the data needed for judgment do not exist. But supposing it to be the case, it does not follow that the native immunity is to be explained by the existence of a causal relationship between diet and cancer. The Departmental Committee in this connexion was fortunate enough to have a good opportunity for inquiring whether cancer mortality was low in members of religious orders subjected to certain dietetic restrictions. A somewhat detailed investigation failed to adduce evidence in support of the contention.

Reports and Further Programme.

The technical reports in which the foregoing deductions were drawn have been issued among the series of Ministry of Health reports on Public Health and Medical Subjects, published by H.M. Stationery Office.[1] In addition they have been made the basis of non-technical memoranda [2] issued by the Ministry of Health for the information of local health authorities and the general public.

This kind of work at the Ministry of Health is continuing—it is extending to radium treatment, cancer of the skin and lip, and other matters. It is an attempt at thorough stock-taking of the position in one section after another, intended to be useful not only to the Government departments and to local health authorities, but to practising physicians and surgeons and to the public. It will also be of value, I hope, for reference in future years; we would give much to be able to assess our progress by reference to similar comprehensive studies if they had been made, say, 30 years ago.

(2) CANCER COMMISSION OF THE LEAGUE OF NATIONS.

For appreciation of the inquiries into cancer which the Health Committee of the League of Nations decided to regard as appropriate to its functions, I may commend to your notice the summarising report (C.H. 631, 1927) made recently by the Cancer Commission, which covers the work done, with the aid of its statistical subcommittee and other experts, from 1923–27. They originated in an attempt to account for the remarkable differences in mortality at two sites, the breast and uterus, as shown in the national statistics of three countries, England and Wales, the Netherlands, and Italy. For example, the death-rate for cancer of the breast in the Netherlands is little over one-half of that shown by the English figures, and the rate in Italy is about one-half that of the Netherlands. As regards the uterus, the rates for Italy and the Netherlands are approximately the same, being somewhat higher in the

[1] P. H. and M. S.: No. 28, Cancer of the Breast and its Surgical Treatment, 2*s*. 6*d*. No. 32, A Further Report on Cancer of the Breast, with Special Reference to its Associated Antecedent Conditions, 3*s*. No. 33, A Report on the Natural Duration of Cancer, 9*d*. No. 34, Report on the Late Results of Operation for Cancer of the Breast (Leeds), 6*d*. No. 36, Diet and Cancer, with Special Reference to the Incidence of Cancer upon Members of Certain Religious Orders, 9*d*. No. 40, Cancer of the Uterus: A Statistical Inquiry into the Results of Treatment, being an Analysis of the Existing Literature, 3*s*. 6*d*. No. 46, Report on Cancer of the Rectum, 1*s*. 6*d*. No. 47, Report on the Treatment of Cancer of the Uterus at the Samaritan Free Hospital, 9*d*. No. 51, Report on the Late Results of Operation for Cancer of the Breast (eight County Boroughs, England and Wales) (in press).

[2] No. 426, Memorandum on Cancer. No. 476, On the Effects of Radium and X Rays Upon Normal and Cancerous Tissues. No. 496, On Cancer of the Breast, the Results of Treatment by Operation. No. 516, Memorandum on Experimental Cancer Research. No. 716, Memorandum on Cancer of the Breast. No. 826, Memorandum on Cancer of the Uterus. All obtainable (1*d*. each) from H.M. Stationery Office, Kingsway.

former; but both are considerably lower than the English rate. Such differences are frequently to be found in different parts of the same country, but in this case the national contrasts were strong and their investigation seemed promising. Prolonged and exhaustive inquiries from the statistical, clinical, and other aspects were made into a whole series of factors which might be thought to have produced these effects. Many plausible and conjectural explanations were taken up, but one by one were shown to be of no validity. But while the explanation of these national differences remains still hidden, and the Commission concluded that it is useless to seek further for it, the investigations which were put in hand led to useful results in other directions. A particularly interesting by-product was an anthropological distribution of races in Europe, worked out by Pittard and Niceforo, with which known facts as to cancer mortality were correlated. Much work similar to that of the English Departmental Committee was undertaken by national groups of experts, not only in Holland and Italy, but also in other countries. This settled various questions on the basis of the experience of several countries; for example, it determined the statistical relations between fertility and cancer of the breast; it confirmed the dictum that the essential point in the relation of cancer of the uterus to parturition is the fact of parturition and not the number of pregnancies, while in regard to the success of early operations the foreign statistics were closely parallel to that obtained by the English group. The Commission insisted on practical lessons derivable from its inquiries, notably as to the need for greater resort to surgery or radiology at appropriate stages, the importance of attention to obstetric methods to prevent the occurrence of chronic inflammation of the cervix, and the advantages of greater national and local expert coöperation for research into cancer problems. They considered also that their inquiries had shown that there is urgent need, in all countries possessing an organised official service of statistics of causes of death, to determine more exactly the degree to which certification by causes is unsatisfactory and how its scientific value may be improved. In the case of cancer such inquiries should take account of the need for uniformly attributing cancer deaths to the primary site of occurrence.

Following this report, the Health Committee at Geneva laid down, last May, certain other lines of inquiry for its Cancer Commission, which seemed to require the kind of expert liaison which the League is in position to supply. Among these are the different incidence of cancer associated with the same occupation in different countries, and the results of radiological treatment of cancer. A subcommission of expert radiologists and gynæcologists under the presidency of Prof. Regaud began its work last month on the latter subject.

(3) The British Empire Cancer Campaign.

Imbued with the necessity of increasing the volume of investigation devoted to the various means for controlling the disease, a body of public-spirited men undertook to form an organisation whose main object was, by financial assistance, to coördinate research, extend existing research centres, and to stimulate the formation of new ones. The funds subscribed to the headquarters of the Campaign in London are allocated to individuals or centres who desire to carry out investigations into any aspect of the cancer problem which is considered likely to be of value, whether direct or indirect. The annual reports of the Campaign set out the allocations made and the purposes to which they were put.

Apart from the central organisation, provincial ones have been initiated, among which may be mentioned the Yorkshire Council, which has collected a large sum of money and set up an active research centre in association with the University of Leeds. Similarly, another organisation, to embrace Lancashire, Cheshire, and North Wales, seems likely to succeed in extending the existing facilities for research in the University centres of Liverpool and Manchester. Somewhat similar efforts, varying with local circumstances and conditions, have been set up in other county areas and university towns.

Another type of action taken by the Campaign is the publication of the *Cancer Review*, a journal devoted to improving the means by which English readers may become more readily acquainted with the work proceeding elsewhere both at home and abroad. There can be no doubt of the value which this journal already possesses for those interested in any of the scientific aspects of cancer research.

(4) Municipal Work.

Under this head it is well to draw attention to what is done in several important provincial centres to utilise the public health department, working through the medical officer of health, as a centre for the local study of the disease and for other practical effort in various directions. The work of several health departments, particularly those whose medical officers of health are included in the special subcommittee which meets at the Ministry of Health, has been invaluable to the inquiries which have been required for its Departmental Committee. Much of the information which has been needed in regard to the conditions associated with cancer, and those which require "follow-up" work, has been obtained by the medical or trained health visitor staff of these provincial centres. The local data have been valuable too for essentially local purposes; the health department has obtained present-day standards by which to measure progress in later years, while the local inquiries have brought out deficiencies which can be rectified in the matter of hospital and home treatment, and have permitted useful experiment. Thus in one or two centres trial is being made of special centres or clinics for women to facilitate early diagnosis of cancer of the breast and uterus. At others different methods of propaganda and educative action are adopted for the same purpose—lectures, talks, leaflets, and the like. The principle to be followed throughout all this local work is to secure the closest possible common action between the municipal health department and the authorities of the general and poor-law hospitals, the university if there is one, the voluntary agencies which support social work, and especially the staffs of hospitals and the medical practitioners—e.g., through the local branch of the British Medical Association—as well as the local work of the British Empire Cancer Campaign, where it is in operation. It is no part of the programme that municipal direction should be made prominent; it is enough for the health department if it can help. Where the medical officer of health is wanted to take the initiative he will do so, otherwise he is content to be one of many cogs on a useful working wheel. Personally I may express the opinion that cancer research has much to gain through his instrumentality, and the experience we already have is my justification.

In reviewing this brief outline of public action in England, and its recent developments, one is conscious of its patchwork, incompleteness, and even its inconsistencies and overlaps. Compared with some extensive efforts in the United States of which I have read, with the *centres anticancereux* throughout France, or with a State cancer institution such as is represented by the new Institut Victor Emmanuel III. in Milan, it may seem meagre. But at least it has in it the elements of elasticity and capacity for development on almost every side, whether in pathology, causation, diagnosis, or treatment, as occasion requires.

Victoria Hospital for Sick Children, Hull.—Last week the Right. Hon. T. R. Ferens opened a new ward and named it "The G. F. Grant Ward," in compliment to the treasurer, who has been associated with the institution for 40 years. The two rooms which compose the new ward will be used for ophthalmic, and nose, ear and throat cases respectively.

CHEMOTHERAPY IN MALIGNANT DISEASE.

WITH SPECIAL REFERENCE TO LEAD.*

By W. BLAIR BELL, B.S., M.D. Lond., Hon. F.A.C.S.,

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In the few minutes at my disposal in which to open this discussion, I can do little more than briefly outline the scientific basis, the scope, and what may be the future developments of so-called "chemotherapy," especially lead-therapy, in the treatment of malignant neoplasia. First, however, it is necessary to decide what is meant by the word "chemotherapy." "Chemotherapy" probably dates from that remote period in the history of mankind when the treatment of disease was first recognised as being possible. But, as a science, "chemotherapy" came into existence in the last half of the nineteenth century following the bacteriological discoveries of Pasteur and the synthetic enterprises of Ehrlich. It is, however, somewhat unfortunate that the word "chemotherapy," which has a very general meaning, should have been adopted for use in the somewhat restricted sense in which it is usually employed to-day.

Definition of the Word "Chemotherapy."

"Chemotherapy" is defined in Dorland's Medical Dictionary as "Treatment based on the selective affinity which various chemicals have for the tissues of the body and for the organisms that may infect it."

Kolmer[1] states that "The term chemotherapy is difficult to define in a brief and concise manner," and he calls attention to the chemotherapeutical affinity shown by drugs like strychnine, digitalis, morphine, cinchona and the rest. It seems, therefore, that we are in need either of a less general term to describe the chemical methods applied to the treatment of parasitic and neoplastic diseases, or of a limitation of its meaning. "Chemotherapy" has become so incorporated in our medical vocabulary that limitation of its application would probably be the better procedure, and I would suggest the following definition. *Chemotherapy denotes treatment by synthetic preparations which have a selective therapeutical action on abnormal tissues of the body and on the organisms that may infect it, with or without the production of associated constitutional phenomena.*

Chemotherapy Applied to Malignant Disease.

Selective chemical treatment in respect of malignant neoplasia may be based on a belief in some supposed causal factor, such as a parasite. Doubtless in these circumstances the therapeutist would seek to develop along the recognised lines the known synthetic parasiticides, none of which is unispecific—that is, specific for one organism only.

Those of us who do not favour the idea of the existence of a specific parasite in connexion with cancer, but believe rather that malignant neoplasia is a specific growth-process (dedifferentiation)—a process that is initiated by many predisposing factors—will turn first to the quest of the mysterious agent or agents that normally control differentiation and somatic correlation. I have not time, nor would it be pertinent to a discussion on chemotherapy, as defined, to dwell on the many observations that have been made in respect of these phenomena, especially by means of experiments in vitro.

Failing to discover the biological—that is, natural biochemical—regulators of differentiation, we must seek some chemical substance that will arrest growth as such, and endeavour to discover one that has also an inhibitory action on the essential functions of the cancer cell, or a selective affinity for some part of its chemical constitution, and some influence on its physicochemical state. In order to produce its effect it should be possible for the chemotherapeutical agent to be injected into the blood stream, and it must reach the cancer cells. Further, in accordance with the principles of chemotherapy, the preparation should have as high a chemotherapeutic index as possible.

If our chemotherapeutical methods are successful we shall expect to find: (*a*) destruction of the neoplastic cells—necrosis; or (*b*) arrest of the growth: (1) without complete disappearance, (2) with gradual disappearance; and we might add a third event, although it is improbable—namely, the redifferentiation of malignant into normal somatic tissue.

If the growth be of large size and undergo rapid necrosis, it is hardly possible that the normal tissues of the host will deal with the necrosed tissue without surgical aid; but when the neoplastic cells are seriously damaged and their devitalisation is gradual, the normal tissue reactions may be such as to lead to the removal of the dead or dying cells. This, apparently, is what happens in successful treatment by X rays and radium.

Lead-therapy in Malignant Disease.

In order to make clear the rationale of the treatment of malignant disease with lead, I must digress first to explain our views on the nature of malignant disease, and, secondly, to illustrate the properties of lead that are concerned in the chemotherapeutic action that may occur.

I have spoken of the specific growth-process of dedifferentiation. It is impossible here to discuss the views that have been advanced on this subject. It is, however, a process that hardly admits of dispute at the present time. The essential point, so far as our own views are concerned, is that this reversionary process is directed towards the trophoblastic type, perhaps through, rather than to, that of the embryonic somatic anlage. Hence the adult somatic cell that undergoes dedifferentiation passes back through the later stages of somatic development before reaching the primitive type. Consequently malignant neoplasms vary considerably in the degree of dedifferentiation that they have undergone, and the most malignant tumours are those in which dedifferentiation is greatest.

In very malignant tumours we should, therefore, expect to find syncytium, as indeed we do. Furthermore, it may reasonably be held, as I have previously suggested, that those forms of so-called "chorion-epithelioma" that are unrelated to pregnancy, for example, "chorion-epithelioma" of the testis, represent merely a high degree of dedifferentiation, and, therefore, of malignancy. A large part of our work has, then, been directed to the demonstration of the chemicoconstitutional and functional—and not only to the morphological—resemblances between the chorionic epithelium and malignant cells of somatic origin.

Now, it seems that every chemotherapeutical agent employed in malignant neoplastic disease should have two attributes at least: (1) the power to arrest cell-growth generally; (2) a special affinity for malignant cells and the chorionic epithelium.

It has long been known that lead arrests growth generally and causes abortion in the human subject. We have repeatedly shown experimentally that the growth of plants and animals is very definitely checked by this substance. We have also demonstrated that lead in suitable doses causes coagulation necrosis of the chorionic epithelium and that abortion is the result of this, rather than a sequel to intrauterine hæmorrhage of toxic causation. The chemotherapeutical index of this effect by a pure lead colloid is approximately 2—a very low ratio. Moreover, we and others have obtained experimental and clinical evidence that lead may cause a similar necrosis of cancer cells in favourable circumstances, but again the chemotherapeutical index is very low.

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* Opening a discussion on the subject at the International Cancer Conference on July 19th.

[1] Kolmer, J. A.: The Principles and Practice of Chemotherapy, with special reference to the Specific and General Treatment of Syphilis, 1928.

Lead in Tumours.

We have found that after treatment lead may be recovered from malignant neoplasms in considerable quantity. In two human cases the lead-content of the malignant tumour definitely exceeded that of the neighbouring normal tissue.

In the case of a carcinoma of the liver, secondary to carcinoma mammæ, the tumour held 41 parts per million of lead, and the adjacent, hepatic tissue 11 parts per million. This is an important observation, for lead is always present in large quantity in the liver after the intravenous administration of this metal.

In the other case, a periosteal sarcoma, the tumour contained 12 parts per million of lead, whereas the normal bone in the neighbourhood contained 1 part per million.

Waterman, likewise, has made interesting observations in regard to the lead-content of the primary tumour and pulmonary metastases in chicken sarcoma. His finding that the pulmonary metastases contained more lead than the primary growth may, perhaps, be explained on the ground of the vascularity of the lungs. Waterman has also shown that tumours treated with lead in vivo are not so readily transplantable as untreated neoplasms.

The Mechanism of the Action of Lead.

Although much work has been done by my colleagues, Prof. W. C. McC. Lewis and his associates, with a view to discovering in what way lead acts on normal growing tissues and on malignant cells, no very definite conclusions have, as yet, been reached; but it appears possible that the action in regard to cancer is both local and constitutional. In respect of the latter some observations on the restoration by lead of the lipase co-enzymic activity in the serum of cancer patients have recently been published by these members of the staff of the Liverpool Medical Research Organisation. It may be remarked, however, that the local effects are likely in the long run to be of much greater significance than the constitutional.

The position at present, then, is that lead inhibits growth and affects the cancer cell deleteriously. Whether this selective action is associated with growth processes only, or in addition, as we think probable, with some special function or constitution of the cancer cell, remains to be finally proved; the question has, however, an important bearing on the chemotherapeutical aspect of the subject.

Apart from this there is another matter that has exercised our minds, and it is this. Since, from whatsoever angle we regard dedifferentiation, we must come to the conclusion that cancer cells resemble in many ways morphologically and functionally the cells from which they are derived; and it follows that the less dedifferentiated the cells are the more they will resemble those from which they arise. For illustration we may mention cancer of the thyroid and cancer of the liver.

It seems, therefore, that in the synthetic preparation of any chemotherapeutical substance, such as a lead-complex, we should take into account not only the specific action of the remedial agent in regard to growth and the malignant cell generally, but also, so far as our knowledge permits, we must consider the special chemical constitution, function, or evokable reactions of the differentiated (specialised) tissue in which the malignant neoplasm has developed. For example, it may be suggested that a sulphur-lead complex should be specially useful in cancer of the skin. One can envisage that the ideal combination would be one in which the affinity of the lead for the sulphur was such that the combination would only be broken by the cancer cell, without previous alteration of the lead-complex.

This method is, of course, simply a way of making the poison more acceptable to the cancer cell, and of enabling it to reach its objective, and so produce the maximum effect.

If it were found possible to make on these lines a preparation of lead which was absolutely specific for any one well-defined type of malignant growth, it would appear that the lead preparation used should vary according to the original tissue from which the neoplasm has sprung.

The Present Position of Lead-therapy.

On such an occasion as this, and in the presence of so many distinguished investigators in the difficult field of cancer research, all of whom know that patience is required in the final solution of this problem, I have felt it wise to confine my remarks meticulously to the title assigned to the discussion and to the time allotted to me.

I have said enough to show that even though we have reached the stage of believing that lead is detrimental to the cancer cell, just as arsenic was long known to be to the spirochæte, we have still far to go; consequently, an analysis of our clinical results, however interesting, would be informative only in respect of the beneficial effects observed, and I have on several previous occasions adduced evidence on this point.

If there is to be discussion of the continually changing position in respect of clinical treatment, I would indicate, if I may be permitted to do so, the lines along which such discussion may, perhaps, most profitably proceed: (1) the preparation of lead employed; (2) the methods of administration; (3) the effects on cancer of the administration of lead followed by exposure to radium; (4) the same followed by exposure to X rays; (5) the effects on cancer of operation, including diathermy, followed by (or preceded and followed by) the administration of lead; (6) the effects on cancer of the administration of lead alone; (7) the effects of lead on other hyperplastic and neoplastic diseases, such as lymphatic leukæmia and lymphadenoma.

I anticipate that the consensus of opinion will bear out the statement I made in the first paper published on this subject (1922) that the effects of radiations are augmented by the previous use of lead. Also, the employment of lead as a prophylactic measure against recurrence after surgical operations for cancer, will, I think, be held to be of great value. Last, but not least, there is a considerable body of evidence supporting the view that by itself lead, even in the crude preparations now used, can cause the disappearance and apparent cure of malignant neoplasms in favourable circumstances, and sometimes can beneficially affect leukæmia and other neoplastic conditions.

Evidence that may be adduced to controvert these statements must be analysed in regard to the modes of procedure practised, and the nature of the cases to which the treatment was applied.

In conclusion, I would repeat that which I have attempted to indicate in my remarks, namely, that the problem of successful chemotherapy in malignant disease, on the basis of the definition I have submitted, is one of extraordinary complexity, but that it is one which is worthy of careful investigation and exploitation.

NORFOLK AND NORWICH HOSPITAL.—After holding for 37 years the post of honorary physician to the Norfolk and Norwich Hospital, Dr. F. W. Burton-Fanning has resigned. In their resolution of appreciation of his services the Governors congratulate him on researches which have increased the sum of general medical knowledge and enhanced the reputation of the hospital.

WAKEFIELD CLAYTON HOSPITAL.—Last week Mr. G. C. Childs, of Camden, New Jersey, a Wakefield man, who has made a fortune in America, opened a new out-patients' wing which he has provided at a cost of £30,000. The accommodation includes departments for the ear, eye, and throat, massage, ultra-violet rays, dental surgery, medical and surgical consulting rooms, casualty rooms, an operating theatre, and a dispensary. Mr. Childs has promised, in addition, to provide a new ward.

TWO CASES OF "CONTRACTION RING."

WITH OBSERVATIONS ON TREATMENT, ESPECIALLY BY AMYL NITRITE.

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THE first account of a case of "contraction ring" is by Smellie,[1] who in 1743 visited in a workhouse a woman who had been in labour five days and "neglected by the surgeon and midwife of the house." He found that the head was low in the pelvis and tried to deliver her with forceps, "but," he adds, "was surprised that I did not succeed when I found the head was not large, the instrument so easily introduced and firmly fixed." He performed craniotomy, and fastened a hook in the skull, but could not, with all his strength, bring it along. After removing the skull bones he "found the under part of the uterus strongly girt or contracted round the neck of the fœtus." "This I gradually dilated, bringing down one of the arms, and pulling on that and the shattered bones and scalp with both my hands, I at last extracted the child with greater ease than I expected. . . . In pushing up my hand to dilate, my fingers passed the mouth of the womb that was girt round the middle of the head, when I was surprised to find another contraction before the shoulders." The puerperium in this case was prolonged.

The next case is that of Baltzell,[2] who describes early rupture of the membranes and a long labour in an extremely fat and corpulent primigravida. After several attempts at delivery the final treatment adopted was "abstraction of blood by copious venesection to relax the system and to embrace the moment of its immediate effect to extract the fœtus with the forceps." This also failed, and the patient expired after 70 hours. Four hours after death a post-mortem examination was made, and it was found that "near the neck and shoulders of the child, the uterus had the appearance as if a circular band about half an inch wide had been forcibly drawn round it."

In 1870[3] Gay described a case of obstructed labour in which the bony pelvis was normal, and with some difficulty he managed to get his hand above a ring of contraction in the uterine wall. Here his hand was "trapped," and, being unable to withdraw it, he proceeded to make a more complete study of the condition, which was typical of what we now know as "contraction ring." In 1882 Smith[4] published the "first work on the question" (Chéron). This consists of a weighing of the evidence for and against Bandl's hypothesis of the formation of a new cervix in the later months of pregnancy from the lower segment of the uterus, upper part of the vagina, and cervix uteri. This idea had already been sharply criticised four years previously by McDonald[6] of Edinburgh, who maintained that Bandl's ring was "conspicuous only by its absence." Smith's own contribution to the matter was a collection of 30 cases of "hour-glass contraction," from which he excludes all "doubtful cases, such as rigid os." He makes no mention nor distinction of the condition now known as "tonic contraction." In 33 labours of 30 women, 8 mothers and 25 children were lost. Three women died undelivered, and, as only seven of the women were primiparous, the remainder had presumably had previous successful pregnancies; this would largely exclude from his series tonic contraction due to mechanical obstruction. He points out that the most general symptom present in these cases is early discharge of liquor amnii. Seven children were saved by turning, and one child by forceps. "The craniotomy record is sickening"—ten cases. He discusses the possibility of Cæsarean section, but finally sums up against it.

Chéron's exhaustive treatise of 1899[7] describes 59 cases; the author had personal knowledge of 18. He makes no distinction between "hour-glass contraction" and the retraction of obstructed labour. In fact, he makes the following statement: "La rétraction isolée de l'anneau de Bandl est un phénomène qui n'est point démontré par les faits cliniques: il est toujours accompagné par la rétraction du corps utérin." Of the cases described, many are clearly associated with pelvic contraction, and his summary of the causes of the condition shows confusion between the two main types recognised at the present time. Among maternal causes he gives obstruction to the passage of the fœtus, early rupture of the membranes, prolonged labour, the premature use of ergot, and in particular the use of bags. Of fœtal causes he states that the most common are shoulder, incomplete breech, and face presentation. The paper is largely concerned with the comparative difficulty and danger of embryotomy and version.

Herman,[8] in 1902, doubted the existence of contraction ring.

Clifford White,[9] in 1913, drew a distinction between contraction ring and retraction ring. In reviewing the treatment to be adopted in contraction ring he first observes that expectant measures are useless, and quotes cases in which they had failed. He mentions the drugs in common use at the present time—i.e., chloroform and morphia—and also two cases successfully treated by amyl nitrite. None of these drugs does he regard as of material value. In his series of 90 cases he finds that where no laparotomy took place the maternal mortality was 58 per cent. and the fœtal mortality 63 per cent. In those in which laparotomy was performed the maternal mortality was 31·5 per cent. and the fœtal mortality 42 per cent. He mentions Willett's[10] method of continuous weight-traction, first employed in 1912, in which a weight of 8 lb., representing a pull of 6¼ lb., brought about delivery after three hours. Williamson, by gentle traction with forceps for 15 minutes, had similar success, marred only by incomplete rupture of the uterus. A third case of contraction ring causing obstruction to the delivery of the after-coming head and overcome by gentle traction was described at the same time.

Author's First Case.

CASE 1 was a primigravida of 27, due to be delivered on Nov. 6th, 1927. She had a bony frame of large proportions, and was grossly obese, so that accurate examination was impossible. Her medical history was stainless, beyond the fact that since puberty she had become extremely fat and heavy. She said that her weight was 17–18 stone. Labour pains began at 1 A.M. on Oct. 20th, and became slowly more severe and frequent up to 3 A.M. on Oct. 21st, the membranes having ruptured shortly before that hour. Her doctor was sent for, and, finding the os fully dilated, attempted to deliver her with forceps. In this he was unsuccessful, and, summoning further assistance, he examined her under chloroform, found that the occiput was posterior, and again failed to deliver her.

On admission to hospital her pains were moderate in severity, her temperature 98·4° F., pulse 96, and lacerations were present at the vulva. The uterus could barely be made out; the presentation could not be determined, and the fœtal heart could not be heard; this was not surprising in view of the thickness of the abdominal wall. Vaginal examination without an anæsthetic was impossible, owing partly to tenderness of the lacerations and partly to the fat surrounding the vulva. At 10.45 A.M. an anæsthetic was given, and examination showed that the os was fully dilated. The vertex was only moderately low and had not reached the pelvic floor. It lay well in the brim, and it seemed clear that the pelvis was causing no obstruction to the passage of the head. The occiput lay posteriorly. Attempts at rotation were fruitless, and no rotation could be achieved even when the vertex was with difficulty pushed just above the pelvic brim. The diagonal conjugate was 4 inches. It was not possible to get the hand above the head, but this was thought to be due to general mechanical difficulties of examination, and no further cause was sought. Finding no obstruction to the descent of the head, the forceps were applied, but soon abandoned when even strenuous efforts failed to cause any descent.

Examination by Dr. J. P. Hedley an hour later revealed a non-pulsating cord around the child's neck, and above this a rigid band of uterine muscle closely surrounding the neck. The lower border of this band lay just above the level of the pelvic brim. The skull was perforated, the bones of the vertex removed, and a cephalotribe fixed to the base

of the skull. A six-pound weight was fixed to the cephalotribe over a pulley at the end of the bed. The patient was given morphia gr. ¼ and scopolamine gr. 1/150. For the following eight hours the patient was kept in a comatose condition with scopolamine and a brief pain occurred about three times per hour. A 12 midnight a smell suggestive of gas gangrene was observed, and an hour later bubbles were expressed from the vagina, and *B. welchii* infection was confirmed by smears. It was decided to remove the fœtus as soon as possible.

At 3.45 A.M. a further anæsthetic was given, and vaginal examination revealed a definite relaxation of the contraction ring, although there was no apparent descent of the fœtus. The ring was now about 2½ inches in diameter. Embryotomy was performed. The right arm was pulled down and amputated near the shoulder, and then the left arm was pulled down with a crochet and avulsed at the shoulder. Traction on the base of the skull still had no effect, and internal version was found quite impracticable, as the contracted zone was some 2 to 3 inches in length. Further morcellement seemed to be the only possible mode of delivery, and the thorax was crushed with a cephalotribe. Traction then enabled the thorax to be half delivered at the vulva, but further progress was impossible owing to the breech being caught above the ring. This was ascertained after the body had been completely eviscerated to allow room for the examining hand. It was clear now that delivery could only be completed by splitting the breech. This was effected with cleidotomy scissors. An assistant held the spine firmly while the operator snipped at the bone close to the junction of spine and pelvis. Some progress being made through the bony tissues, the spine was twisted strongly and, with a few more snips, became detached. It transpired that section had been made through the left sacro-iliac joint and avulsion occurred at the right. The sacrum was removed with the spine. It was then comparatively simple to divide the symphysis pubis anteriorly and, after tearing through the soft tissues, to remove each leg with the corresponding ilium, ischium, and pubis.

The placenta was removed manually, and this operation revealed a rigid canal closely fitting the wrist, about 2 to 3 inches long, above which the hand could move freely in the fundus. No uterine lacerations could be felt. The placenta was normal, and the loss of blood in the third stage was negligible.

A peroxide of hydrogen douche was administered and antigas treatment instituted. The pulse was 152–160, temperature 98·6° F. The patient's condition appeared to improve up to the sixth day, but a rigor occurred on the seventh, and she died on the eighth day after delivery, from acute toxæmia. At autopsy, a sloughing perforation was found at the lower and posterior part of the uterus, communicating with the pouch of Douglas. There was also a small uterovesical fistula. The internal surface of the uterus and vagina was green and necrotic, and the septic infiltration had reached the muscular coats.

I wish to thank Mr. L. W. A. Lankester for assistance at operation and careful notes, and Dr. J. P. Hedley for his assistance and permission to publish the case.

It was the unsatisfactory method and result of treatment in this case that stimulated an inquiry into the history of the condition.

It is clear that no satisfactory line of treatment is at present known. Cæsarean section is probably the method of choice when the condition is diagnosed before any serious attempts at delivery per vaginam have been made. But this seldom occurs (even Smellie tried the forceps first), owing possibly to the fact that undue internal manipulations play a part in the causation.

Treatment with Amyl Nitrite.

In a survey of the literature one method of treatment alone seems to have met with universal success. In four cases gleaned from the literature, and a fifth in which it has recently been employed, the inhalation of amyl nitrite has been followed by delivery.

CASE 2.—In 1882—i.e., 15 years after Brunton's [11] first experiments with cases of angina pectoris—Barnes [12] was called to a woman, aged 22, who was recently delivered of her second child. The placenta had been retained for six hours. The external os and cavity of the cervix were fully dilated and a contraction was present at the internal os and above it, which only allowed the admission of one finger. On inquiry it transpired that the midwife had given ergot as soon as the child was born, and as an antidote to this, Barnes administered 3 drops of nitrite of amyl on a handkerchief. He described the effect as follows: "During the inhalation the ring of muscular fibres round the os internum, which had been so rigid as to be absolutely undilatable, steadily yielded until I could pass the whole hand into the uterus and reach the placenta, which was universally adherent."

CASE 3.—In the next year Steele [13] described a similar case in which he employed amyl nitrite, having read Barnes's report. The woman was a negress who had been delivered five hours previously and had lost a considerable amount of blood. The report continues as follows: "no effort had been made to remove the afterbirth. She had been and was still having 'pains.'" Having learned this, I supposed I would have but little trouble, so I gave a dose of ergot as a precaution against after-hæmorrhage, and proceeded by expression and slight traction to remove the placenta. After considerable effort and further examination I concluded that I had hour-glass contraction to deal with sure enough, and, fearing that the ergot might possibly make matters worse, I proceeded to make her inhale the vapor of amyl freely. When she began to feel the effects of it, I handed the handkerchief to the "granny" that the amyl might be continued, while I made effort to remove the placenta. The finger, as before, could easily follow the cord up to the slightly contracted part of the womb, but it would go no further, and my efforts at removal failed again. All this time (only a few minutes, however) she had been inhaling the amyl. I now oiled my hand and arm, determined to proceed in the orthodox way, but on introducing my hand into the vagina I was gratified to feel the placenta already slipping out of the womb. It was removed without further trouble and the woman did well."

In 1906 Soutar [14] described two cases.

CASE 4.—The patient had been 24 hours in labour with a shoulder presentation. The uterus was in a state of continuous or tonic contraction, and attempts at version were futile. The ring of contraction admitted only three fingers. Embryotomy was attempted, the arms were cut off, but further progress was impossible. "At this juncture it happened, fortunately for the patient, that her general condition caused Dr. Kennedy to point out that she had had as much chloroform as he considered safe, if not a little more. As her pupils were rather dilated and her breathing shallow, I suggested giving a 10 minim inhalation of amyl nitrite as an antidote to the chloroform. I cannot take any credit for anticipating that which happened next; but fortunately I still had my hand in the vagina, trying to overcome the grasp of the womb and bring down a leg. My confrere snapped two 5-minim capsules of amyl nitrite and held them under the patient's nose. After what seemed like an interval of about 10 seconds, and suddenly, as if something solid had given way, the contraction of the womb relaxed under my hand, which passed easily up to the fundus and seized a leg, after which the delivery was finished in a few minutes." No notable hæmorrhage occurred.

CASE 5.—This was a multipara who had been in labour for 24 hours and appears to have had a contraction ring. Soutar bore in mind his previous experience, but understood the value of a control. In his own words: "For the sake of accuracy we decided to make an honest try to deliver with chloroform alone if possible." Attempts with forceps failed, and he was satisfied that delivery by this means was impossible. The inhalation of 10 minims of amyl nitrite was followed by sudden delivery. "So suddenly and completely did all contraction cease for the moment that the child was lying on the bed before my colleague (having given the inhalation) had time to fetch his bag from the next room." There was no post-partum hæmorrhage.

Author's Second Case.

I am greatly indebted to Dr. J. Ingram, of Devonport, for the opportunity of seeing and reporting the following case.

CASE 6.—A woman of 43 was in the eighth month of her eleventh pregnancy. She had had six living children at full term, one stillbirth at full term, one at eight and a half months, and two at eight months. Labour pains began at 10 A.M. on March 20th, 1928, and were described as "terrible" until the membranes ruptured at 2 P.M. The pains then ceased until at 4 P.M. she had a severe pain which was followed by considerable hæmorrhage (15–20 oz.). Examination at 4.30 P.M. showed the vagina and lower uterine segment to be distended with blood-clot. The os was perceptible as a slack ring in the wall of the lower uterine segment. There was no contraction of the bony pelvis. At a distance of 1½ to 2 inches above the os the uterine wall was contracted to form a rigid canal extending upwards for at least 2 inches and uniform in diameter—about 2 inches. There is no doubt that this was a true contraction ring. Through it could be felt the lower limbs of a premature infant. A leg was brought down, a fillet attached to the ankle and firm traction made upon it. This resulted in avulsion of the foot. The other leg was

brought down and the abdomen of the fœtus was now embraced by the ring so tightly that no further progress could be made. Conditions were unchanged for ten minutes, when an inhalation of 6 minims of amyl nitrite was given. For one minute no change could be felt in the consistency of the ring, but at the end of this time traction on the trunk caused easy descent of the fœtus and further examination of the ring was not practicable. Delivery was complete in three minutes. The placenta was retained in the uterus, and as the condition of the patient was poor as a result of antepartum hæmorrhage, the placenta was expressed by Crédé's method, without much difficulty. Hæmorrhage in the third stage was slight. The fœtus was about 1½ months premature, and stillborn. The head was not grossly misshapen. The puerperium was normal.

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STEREOSCOPIC RADIOGRAPHY OF THE CORONARY CIRCULATION.

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AT a meeting of the Association of Physicians of Great Britain and Ireland held in Belfast in June, 1927, I had the privilege of showing a series of radiograms in stereo of hearts and kidneys injected with an opaque emulsion. In answer to a large number of inquiries, I propose to give a brief account of the technique used and a few observations from a study of the injected hearts.

Technique.

Removal of Heart from the Body.—A portion of the great veins must be removed intact with the heart. This is essential if troublesome leakage from the atrial vessels is to be avoided.

Opaque Medium.—Röntyum, a preparation of barium, was found to give the best results. This substance forms a very fine and stable emulsion. Röntyum, 40 g., is emulsified with distilled water, 75 c.cm.

FIG. 1.

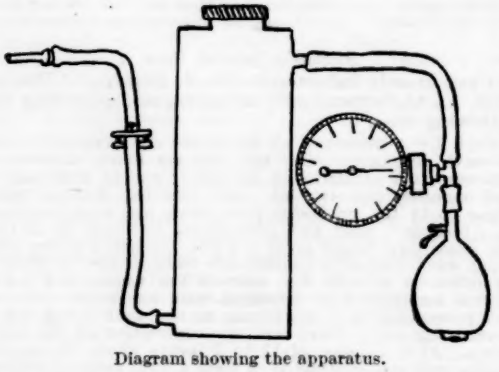


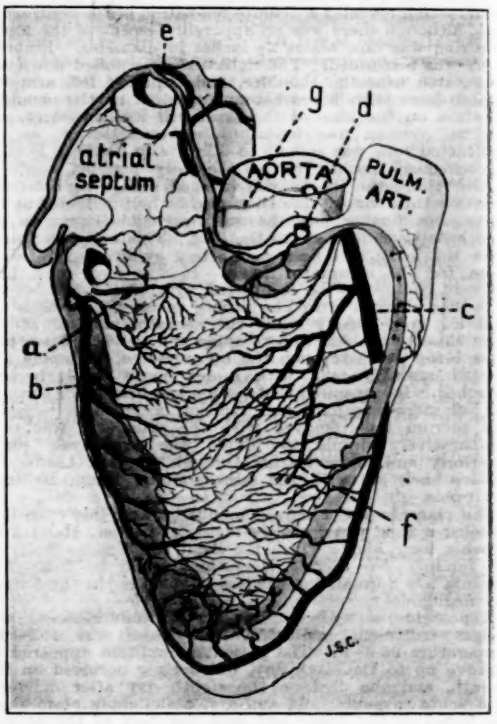
Diagram showing the apparatus.

Apparatus.—The diagram (Fig. 1) is self-explanatory. A pressure of 280 mm. of mercury is maintained for three minutes.

Fixation.—After injection of both coronary arteries the chambers of the heart are packed with wool and the organ immersed in 10 per cent. formalin for 24 hours to secure fixation in the best position for stereoscopic examination.

This simple method has been found to give satisfactory pictures when a stereoscopic X ray photograph has been taken of the injected specimen. The skiagrams demonstrate very clearly the finer ramifications of the cardiac vessels, while small variations in their calibre can be readily noted. A fuller interpretation of the skiagrams necessitates detailed knowledge of the minute anatomy of the cardiac circulation, for which I am indebted to the work of Gross.[1] The variations in the distribution of the coronary vessels as noted by him were confirmed, but their occurrence has been greater in my series. The alteration in the relative vascularity of the ventricles which comes with advancing age, and results in a decrease of the blood-supply to the right heart through an increase in the development of anastomotic branches, was also verified. Diminishing vascularity of the heart similar to that found in senility was found to accompany coronary disease.

FIG. 2.



Line drawing from stereophotograph of the cardiac septa (right aspect) showing a septal anastomosis and blood-supply of the neuromuscular tissue. (*a*) Ramus septi fibrosi (art. to A-V node and bundle). (*b*) Right coronary, post. descending branch. (*c*) Left coronary, ant. descending branch. (*d*) Origin of right coronary. (*e*) Ramus ostii cavæ superioris. (*f*) Artery entering moderator band (ramus limbi dextri). (*g*) Arteria anastomotica auricularis magna. Kugel[1] describes this branch and found it arising from the left coronary in 66 per cent. of his specimens. I noted it in 62 per cent. in my series. Origin of ramus septi fibrosi: from the right coronary, post. circumflex br. 83 per cent. (Gross—92 per cent.); from the left coronary, post. circumflex br. 17 per cent. (Gross—8 per cent.).

The Coronary Anastomotic Network.

Removal of portions of the ventricular walls made possible a stereoscopic study of the septal circulation and the supply of the neuromuscular tissue. Fig. 2 illustrates a rich anastomosis in the septum. In this case the ramus septi fibrosi (artery to the auriculo-

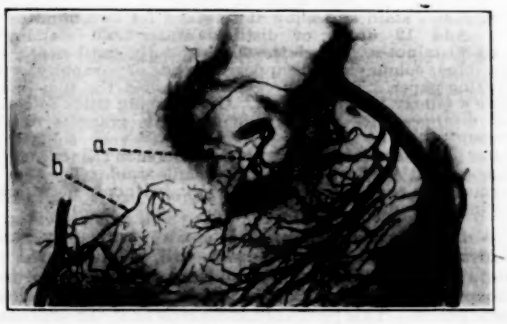
ventricular node and bundle) is seen to form seven distinct connexions. These are: (*a*) Through its branch to the atrial septum with a posterior atrial vessel, a descending branch of the ramus ostii cavæ superioris, and anterior atrial branches from the right and left coronaries. (*b*) In the interventricular septum with branches from the right and left coronaries, and a branch arising from the right coronary near its origin. Of this last vessel, which occurs in 20 per cent. of my series, I can find no previous mention. Its importance, moreover, merits a fuller description. Leaving the under surface of the right coronary close to its origin, it runs downwards and backwards in the substance of the crista supraventricularis to reach the interventricular septum, where it anastomoses with the septal branches of the anterior descending division of the left coronary (Fig. 3) and, in some instances, with the ramus septi fibrosi. This artery was present in five hearts showing extensive disease of the proximal portion of the anterior descending branch of the left coronary. It may assist in supplying the right limb of the bundle.

Stress is laid on this anastomotic network supplying the neuromuscular tissue because of its importance in the interpretation of clinical findings. Injury to the conducting tissue (heart-block, bundle lesion) is shown on electrocardiographic tracings. Tracings in cases of coronary occlusion show these rarely; in some they are transient,[2] the ordinary blood-supply being apparently able to protect this important tissue. Géraudel[3] reports two cases of Stokes-Adams syndrome in which the ramus septi fibrosi (artery to the node and bundle) was stenosed. My present series includes a case in which partial occlusion of this vessel did not produce a lesion recognisable by the electrocardiograph. This heart showed a well-developed atrial branch of the ramus septi fibrosi communicating with the anastomotic network in the atrial septum.

The attention that is being focused at present on the clinical diagnosis of coronary thrombosis adds interest to some of my cases. I shall pass over them briefly here as a more detailed survey of the series is in course of preparation.

It was observed that an early sign of coronary disease was a narrowing of the lumen of the small twigs of the coronary vessels. This gave these small vessels an appearance of having been nipped just at the point of leaving the parent vessel. Numbers of hearts were found with partial or total occlusion of a coronary artery or its branches. Five of these presented a large area of infarction, others fibrous plaques in the myocardium, while others showed no lesion apparent to the naked eye. These hearts without exception had highly developed compensating anastomotic channels, a beautiful subendocardial network in a case of gross infarction being sufficiently rich to preserve the lining layer of the organ. Two specimens of complete right coronary occlusion are of especial interest. Röntyum injected into these via the patent left coronary artery was found to have filled the occluded right coronary. This occurred through connecting channels chiefly in the interventricular septum.

FIG. 3.



Skiagram of upper portion of interventricular septum. (*a*) Artery present in 20 per cent. of cases (additional supply to right limb of A-V bundle). (*b*) Ramus septi fibrosi.

This article refers to the first 92 hearts in my series.

My best thanks are due to the honorary staff of the Royal Victoria Hospital for the material put at my disposal; and to Mr. Leman and Miss Baird, of the radiological department, for their technical assistance.

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Clinical and Laboratory Notes.

SERUM PROPHYLAXIS IN MEASLES.

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IN recent years attention has been more and more directed to the study of measles, and while an advance has been made in the provision of increased hospital accommodation for the treatment of the disease, the preventive aspect has not received its due recognition. It is 12 years since Nicolle and Conseil, in France, and Park and Zingher, in America, first published the results of their work in this direction, and since then comparatively little additional literature has appeared on the subject. This paper is based on work at Monsall Hospital, Manchester, the opportunity for which was furnished by an epidemic of measles of considerable proportions in that city during the last few months of 1927.

It is well known that the serum of patients convalescent from measles can be used either to prevent or to attentuate the disease. At times when measles is epidemic it is inevitable that the wards of an infectious diseases hospital should become cross-infected, and any remedy for this state of affairs should be extremely valuable. As the epidemic period of measles is rather limited, it was all the more desirable to concentrate on the preventive use of serum, and accordingly no work was done on sero-attenuation of the disease.

For the provision of serum the choice of donors is necessarily limited largely by the age-period of the disease. This was one of the greatest difficulties, and full use had to be made of the few adult patients who were admitted. The donors who kindly provided blood for this work were mainly nurses from other institutions in the city who had the misfortune to contract measles. Two to three hundred cubic centimetres were removed when possible, the time chosen being from the seventh to the tenth day after deferrescence.

The procedure followed in the preparation of the serum was that of Debré and Joannon, the details being as follows:—

1. The blood after removal from the donor was allowed to coagulate at room temperature for 36 to 48 hours. 35 to 40 per cent. of serum was obtained.

2. A Wassermann reaction was performed with each sample of serum.

3. The serum was heated at 56° C. on two successive days.

4. The sterility of each sample of serum was tested by cultural methods.

5. Serum from at least three donors was pooled.
6. The mixed sera were tested by cultural methods.
7. The serum was stored in an ice-chest until required.

The serum was administered subcutaneously and a uniform dose of 10 c.cm. was employed irrespective of age and the length of exposure. No untoward effects were noted, nor were symptoms of serum sickness observed in any case. The details of the experimental work in chronological order are given below.

Experiment 1.—Measles broke out in a scarlet fever ward containing 14 children, six of whom were not recorded to have had measles, and of these, three were adjacent to the infective case, who was, of course, removed to an appropriate ward. The three nearest susceptible children were inoculated on the third day after exposure. Within six weeks the three uninoculated children developed measles along with three other children who were recorded to have had measles previously. The three inoculated children, aged 2, 4, and 4½ years, were under observation in the same ward for 62, 45, and 30 days respectively, and in spite of repeated exposure, failed to develop measles.

Experiment 2.—Three scarlet fever patients occupied a room with accommodation normally for one adult patient. None was stated to have had measles. One child developed the disease and was removed, and the youngest contact, aged 3 years, was inoculated on the third day after exposure and failed to develop measles during 28 days' observation. The remaining patient, aged 5 years, duly developed measles after the normal incubation period.

Experiment 3.—A baby, 2 months of age, was sent to hospital in error in an ambulance along with another infant suffering from measles. Infection was presumed to have taken place, and the baby was nursed in a measles ward, having been given serum on the third day of exposure. No symptoms were noted during observation for a period of 20 days.

Experiment 4.—Following the occurrence of a case of measles in a bed-isolation ward, three children, aged 3, 2, and 4 years, received prophylactic inoculations on the third day after exposure. Six days later another child developed measles, and after a further 11 days the sole remaining susceptible patient developed the disease. The inoculated children were under observation for periods of 51, 32, and 40 days respectively, and showed no symptoms.

Experiment 5.—An infant, 3 months old, in contact with measles at a children's hospital, received serum on the third day after exposure, and was nursed in a measles ward. No symptoms were noted over a period of 47 days.

Experiment 6.—Measles infection appeared in a diphtheria ward, and the only known susceptible children were two brothers, 5½ and 7 years of age. The youngest child only was inoculated on the third day and remained free from symptoms, while the brother developed a typical eruption on the fifteenth day after exposure.

Experiment 7.—Two children unrelated, notified as suffering from laryngeal diphtheria, were nursed in the same steam tent for 24 hours. Unfortunately, one proved to be in the prodromal stage of measles. The other, an infant of 6 months, was thereupon inoculated and failed to contract the disease during a month's observation.

Experiment 8.—A scarlet fever ward became cross-infected with measles. The five known susceptible patients, with ages varying from 2½ to 7 years, received serum on the second day after the occurrence of the case. It was hoped thereby to stamp out the infection. After the usual incubation period, a child stated to have had measles previously, contracted the disease, and, after a similar period, an adult, also stated to have suffered previously from the disease, developed typical symptoms. None of the inoculated children developed the disease.

Experiment 9.—Two days after exposure the only two children who were known to be susceptible in an infected diphtheria ward received prophylactic inoculations. Neither developed measles, and no further cases occurred in the ward.

Conclusions.

1. Measles convalescent serum is a safe and reliable prophylactic remedy, if given in adequate dosage within the first three days of the incubation period.

2. The use of convalescent serum is necessarily limited by the difficulty in obtaining suitable donors.

3. A history of an attack of measles in a child is frequently unreliable. This circumstance limits the absolute control of measles in a children's ward by the use of convalescent serum.

COMBINED VITAL AND NON-VITAL METHOD OF STAINING CORPUSCLES.

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The following method of staining blood films is comparatively simple, and with a little experience can be carried out as a routine practice in all cases of anæmia. The original method of staining reticular cells was to take a drop of blood on a cresyl-blue stained slide, cover it with a cover slip and place it in a moist chamber in an incubator for 15 to 20 minutes; then a film was made by moving the cover slip over the slide, and finally it was counterstained with methylene-blue or Leishman's stain. This technique, however, is too complicated for general use. The method described below has the advantage not only of staining the reticular cells with cresyl-blue and the leucocytes with Leishman's stain on the same slide, but the technique is nearly as easy to carry out as staining a film with Leishman's stain only.

The method consists in :—

1. Staining a slide with brilliant cresyl-blue and making a blood film on this stained slide, or staining a drop of blood with cresyl-blue and making a film in the ordinary way.

2. Counterstaining the film with Leishman's stain.

(1) *Technique of Vital Staining.*—There are two ways of staining the reticulocytes: (*a*) Take a clean, grease-free glass slide, pass it through a flame nine or ten times so as to heat it well, and dip it into a glass jar containing a 0·3 per cent. solution of brilliant cresyl-blue in ethyl alcohol; then stand the slide on end for a couple of minutes to allow the stain to dry, and polish it gently on a piece of smooth paper or with a soft handkerchief. It is essential to heat the slide well as this ensures an even spread of the stain, without which the result is not, as a rule, satisfactory. On the cresyl-stained slide take a drop of the patient's blood and make a thin film in the usual way. Wipe off the stain on the reverse side of the slide with a damp cloth. The film can be kept or stained immediately with Leishman's stain.

(*b*) I find that a 0·3 per cent. solution of brilliant cresyl-blue in normal saline, to prevent hæmolysis, with 0·2 per cent. potassium oxalate added to stop clotting, is a quicker and more satisfactory method of staining the reticular cells. Take a large drop of blood on a slide and add to it about the same amount of cresyl-blue from a pipette; mix thoroughly by drawing this solution into the pipette three or four times. Place a drop of the mixture on the end of a clean fat-free slide and, holding another slide at an angle of about 50°, make a film in the usual way. This is necessary in order to obtain a thick enough film, as on account of the dilution of the blood if the upper slide is held too low down the film may be too thin to be satisfactory. The dilution of the blood also allows of an even spread, and the making of a good film becomes a comparatively easy matter.

(2) Cover the film with 12 drops of fresh undiluted Leishman's stain and allow it to stand for two minutes to fix. Add 12 drops of distilled water and stand for 7 to 30 minutes. Wash the film carefully until nearly all the blue colour has disappeared and dry rapidly with blotting-paper. To be successfully stained the film must have a faintly blue tinge in it. Overwashing tends to cause the disappearance of the blue from the granules of the reticulocytes, as brilliant cresyl-blue is very soluble in water; underwashing leaves too much blue in the leucocytes and spoils the effect of the Leishman's stain. The film is permanent and can be put away without necessarily mounting it under a cover-glass.

A film stained with Leishman's stain only, and showing marked polychromasia, will, when stained by the cresyl-blue Leishman method, show with few exceptions reticulocytes in place of the polychromatophilia. This probably indicates that the ordinary polychromasia is merely the ineffective staining of reticulocytes by Leishman's method.

South Devon Hospital. — Princess Mary on July 21st laid the foundation-stone of the new wing for extending the South and East Cornwall Hospital, and for providing accommodation for 60 additional patients and about 300 out-patients.

Reviews and Notices of Books.

How to Start in General Practice.

Being Practical Advice for the Newly Qualified. By Isaac Briggs, M.R.C.S., L.R.C.P. London: John Murray. 1928. Pp. 158. 6s.

So long as a man's outlook in medical practice is not dominated by ideas of profit and loss, he will be all the better for some acquaintance with the principles that underly them. As the author of this excellent book says in the preface, the ethical side of practice is always being impressed upon the intending practitioner, often to the exclusion of business and practical considerations. If a young doctor takes up general practice with a limited capital and no business knowledge of how to use it, he is likely to have experiences that may sour his future outlook, and in any case, is at an unfair disadvantage compared with colleagues who have studied medical practice from a business point of view.

Remembering, then, that ethical considerations come first and will chiefly influence his future happiness, no intending practitioner can be the worse for a knowledge of what Dr. Briggs has to say. The book tells him how to register, which defence societies to join, and what to read, mentioning especially "The Conduct of Medical Practice," published by The Lancet. He learns how to purchase a practice and is wisely told to guard against the temptation of dispensing with legal aid in doing so. "Amateur law or accountancy are far more expensive hobbies than amateur physic," says Dr. Briggs, and "if a vendor declines an accountant's investigation . . . bid him a courteous adieu." Advice is given as to courses open to those not possessing sufficient purchasing capital, and some useful notes about building societies, architects' fees, and contracts are added. Chapters follow on furnishing of a doctor's house and on renting rooms and garages. Another deals in great detail with methods of book-keeping.

The latter half of the book concerns itself with equipment, instruments, practice bags and, useful to those who intend dispensing, suggestions for stock drugs, lists of prescriptions, and other useful information culled from long experience in general practice.

It has been our melancholy experience to comment on certain American books, in which the authors have called loudly for permission for doctors to enter the field of business competition on equality with all men, to advertise their specialties to all the world, and generally to break through what they consider hampering obligations of old-fashioned and unbusiness-like methods. Dr. Briggs's book is based upon no such false position; nothing in it is in any way incompatible with medical practice as a vocation, and we commend it to those who have a high sense of the dignity of their profession but an unnecessary ignorance of business methods.

Practical Serology.

Third edition (1926). By Luigi Vigano, Professor in the Royal University of Milan; Assistant Director of the Serotherapeutic Institute at Milan. Translated by E. Mary Heffer. Edited by C. G. L. Wolf, Addenbrooke's Hospital, Cambridge. W. Heffer and Sons, Ltd. 1928. Pp. 221. 12s. 6d.

This little book, which has run through three editions, in Italy covers a field not touched by any book of its size in English. In the course of just over 200 pages a large number of serological methods are described. The accounts are necessarily brief and partly, owing to translation, are not always quite clear. The chapter devoted to the care, nourishment, and breeding habits of laboratory animals contains much useful information. Workers in this country will be disappointed with the chapter on agglutination which gives no reference to G. Dreyer's (or any other) water-bath method for performing the test. The statement that inoculation agglutinins generally disappear from the body three or four months after the inoculation, and the suggestion that primary agglutinins can be easily distinguished from secondary ones by the height of the agglutinin titre will not meet with general agreement. The association of the Weil-Felix reaction with the diagnosis of cerebro-spinal meningitis is an error; the test gives no help in this connexion. Four methods of performing the Wassermann reaction are set out; a method for obtaining quantitative results by keeping the amount of antigen and complement constant and using various dilutions of the patient's serum might have been included with advantage. No less than 18 methods are described for the diagnosis of syphilis by means of the flocculation reaction, but there is no guidance offered as to their respective values.

The book gives an interesting insight into the serological methods employed in Italy.

Sex Problems in India.

By Prof. N. S. Phadke, Professor of Mental Philosophy, Rajaram College, Kolhapur. Bombay: D. B. Taraporevala, Sons and Co. 1927. Pp. 348. R.6.

This book is an exposition of eugenics in relation to the social conditions and customs of India. It is intended for Indian readers. The author writes with knowledge of his subject, which he is at pains to present, not as a new-fangled Western idea, but as one which, though emanating from the West, is supported in its essential points by numerous texts from Hindu Scripture. Thus Prof. Phadke's clear enunciation of the sociological and moral indications for eugenics in India is heavily supplemented by quotations from Sutras and Shastras, the relevance of which will be better understood by the Hindu than by the European reader. It is interesting to note that, while an advocate of Swaraj, Prof. Phadke holds that the achievement of self-government by Indians will not necessarily result in their immediate and automatic racial improvement. "To hope that a race of fit Indians will automatically arise the moment we are politically free is as ridiculous as to hope that a rich harvest will automatically be yielded when the rains come, even though we may sit with folded hands, taking no trouble of sowing."

Prof. Phadke's book is to be recommended to all Indians interested in the racial future of their country, and especially to the rising generation of Indian medical men.

Filterable Viruses.

Edited by Thomas M. Rivers. London: Baillière, Tindall and Cox. 1928. Pp. 428. 34s.

The recognition that many diseases may be due to agents which pass through bacteriological filters and are beyond the limits of ordinary microscopic vision has opened a fascinating field for research, as interesting as it is difficult. There is already a considerable literature on the subject, but it is scattered in various journals, and the treatment of virus diseases in the text-books is brief and uncritical. This volume, therefore, is a timely contribution to pathological literature. Published under the general editorship of Dr. Thomas M. Rivers, it consists of ten chapters, each dealing with a different aspect of the subject, and each written by a worker who is a recognised expert in his particular branch. The first chapter by the editor on some general aspects of filterable viruses is one of the best in the book. It is a sane and balanced presentation of the subject and is enriched by references to 539 articles. Other chapters deal with Filters and Filtration, by Dr. Stuart Mudd; Tissue Cultures in the Study of Viruses, by Dr. A. Carrel; Intracellular Pathology in Virus Diseases, by Dr. Edmund V. Cowdry; Virus Diseases of Man (Poliomyelitis), by Dr. Harold L. Amoss; Virus Diseases of Mammals (Foot and Mouth Disease and Vesicular Stomatitis), by Dr. Peter K. Olitsky; Virus Diseases of Fowls (Contagious Epithelioma), by Dr. Ernest Goodpasture; Virus Diseases of Insects (Sacbrood and Polyhedral Diseases) by Dr. Rudolf W. Glaser; Virus Diseases of Plants, by Dr. Louis D. Kunkel; and Virus Diseases of Bacteria (Bacteriophagy), by Dr. Jacques J.

Bronfenbrenner. Each chapter is accompanied by a bibliography, and there is an adequate index.

It will be noticed that only certain selected examples of virus diseases are discussed, others are mentioned in passing or are omitted altogether. This deliberate selection permits of a more general survey than would have been possible had a greater mass of detail been included in each section. The articles are not all of equal merit or equally judicial, but they are all well informed. Each author has had a free hand and if, therefore, points of disagreement are discovered in different chapters, this is merely an indication of the fluid state of our present knowledge of the subject. The volumes as a whole will be welcomed by all who are interested in virus diseases, and may be recommended as a reliable introduction to this important branch of pathology.

THE LOCOMOTIVE-GOD.

By WILLIAM ELLERY LEONARD. London: Chapman and Hall. 1927. Pp. 434. 18*s*.

Mr. Leonard, a professor in an American University, offers the world this autobiography of an agarophobe. After the onset of the symptom in adult life, he recovered a series of forgotten memories which, he reasonably believes, have a close relation to the phobia. This work of recovery, which occupied seven years, was carried on chiefly by crystal-gazing, and to the obvious objection that the memories were fantasies, he answers by detailed confirmation from outside sources. The "Locomotive-God" was a terrifying visualisation derived from frights in early childhood, and his description of the process of gradual resolution into its elements conforms to what is known of such phenomena and stamps the record as genuine. He wrongly applies the term psycho-analysis to his process of recall, whilst protesting frequently that Freudian elements are absent, but psycho-analysts will perhaps trace the evidence for these elements in such incidents as the compulsion upon his parents to sleep near him with the intervening doors open—a typical infantile situation which may call out for real analysis. The tyranny of the neurosis as it enforced itself upon relatives is adequately described, but unrecognised, by the author; the phobia led to their constant attendance, and in the tangle of cause and effect the regressive infantile need for their presence may well have been a stimulant of the phobia. Indeed, the psycho-pathologist will find in the story many situations the significance of which is lost to the writer, though this in no way detracts from the instructiveness of this human document. His phobia still persists, and its persistence will be regarded by some as proof that the genesis of the Locomotive-God is not fully revealed. The book has much value; what that value is depends upon the reader. The psychopathologist will doubtless find in it material to confirm his own special theories; the practitioner who tends to despise the neurotic will learn from it the suffering that the latter can undergo; the emotionally well balanced will gain insight into the emotions of the poorly balanced; but the poorly balanced themselves had better avoid it.

JOURNALS.

THE JOURNAL OF PATHOLOGY AND BACTERIOLOGY. Vol. XXXI., No. 3. July, 1928. Pp. 445–596.—The Fate of Colloidal Iron administered Intravenously, by C. J. Polson (Manchester). A combination of chemical and histological examinations shows that the iron accumulates chiefly in the lungs (where it forms emboli in the vessels) and in the liver and spleen (where it is ingested by endothelial cells).—Virus III., with special reference to the Response of Immunised Rabbits to Reinoculation, by C. H. Andrewes (London). The virus was found by making serial testicular inoculations. Partly immunised (sensitised) animals give a larger local response on reinoculation than either normal or immune animals. The virus survives longer in refractory animals such as the guinea-pig than in actively immunised rabbits.—Normoblast, Reticulocyte, Erythrocyte, by F. C. O. Valentine (London). The reticulum of reticulocytes originally forms the connexion between nucleus and cytoplasm.—The Gram-negative Cocci of the Nasopharynx, by S. P. Wilson (Manchester). Apart from the meningococcus and *M. catarrhalis*, a number of ill-defined forms can be distinguished, the systematic position of which is very dubious.—Cerebral Gliomata, by E. A. Carmichael (London). On the whole, the classification of Bailey and Cushing is substantiated; but it is too complicated and the author prefers a simple division into relatively malignant spongioblastic growths and relatively benign astroblastic tumours.—Continued Fever due to *B. alkalescens*, by J. Smith and A. N. Fraser (Aberdeen). The first recorded infection by this organism: a septicæmia arising after childbirth.—The Temperature of Normal Rabbits, by P. Lazarus-Barlow (London). A valuable series of four-hourly readings on eight rabbits for 23 days. The mean is 102·7° F., with a small but regular diurnal cycle. A deviation of 2°F is significant of something abnormal.—Multiple Zones in the Serum Precipitation Reaction, by N. E. Goldsworthy (Cambridge). Mixtures of horse-serum and the corresponding rabbit antiserum may show several foci of precipitation on either side of the optimal mixture which gives the largest reaction.—The Part Played by Alcohol in the Wassermann Reaction, by C. H. Browning and E. M. Dunlop (Glasgow).—Thrombo-angeitis Obliterans, by R. O. Girdwood (Aberdeen). A man of 29. The fibrosis which mats together arteries, veins, and nerves was a striking feature.—The Gastro-intestinal Flora in Pernicious Anæmia, by L. S. P. Davidson (Edinburgh). There is a great numerical increase in *B. coli*, streptococci, and *B. welchii*, both in the stomach and duodenum and in the fæces. No evidence was obtained that the varieties of these organisms present differed from these found in normal persons.—Tuberculosis in a Dog, due to Infection with a Bovine Virus, by G. S. Wilson and R. Lovell (London). A mesenteric gland in a puppy.—Gummata of the Aorta with Rupture into the Pericardium, by R. J. Wright-Smith (Melbourne).—Gumma of the Heart Wall in an Infant of Six Weeks, by J. W. S. Blacklock and J. A. W. McCluskie (Glasgow).—*Bacillus enteritidis* Infection in Wild Rats, by J. C. Kerrin (Aberdeen). Gaertner's bacillus was found in 11 of 100 wild rats in Aberdeen.—A Simple Apparatus for Filtering Small Amounts of Fluid, by D. L. Johnston (Aberdeen). A piece of Seitz filter is supported half way up a centrifuge tube.—The Cultivation of an Organism from the Spleen in a Case of Banti's Disease, by A. A. F. Peel (Glasgow). A pleomorphic fungus.

THE LECTURES ON CANCER given as part of a post-graduate course held locally in the winter of 1926–27 have been published in book form by the Manchester Committee on Cancer. The volume includes also a special report on the results of operation in cases of cancer of the breast, compiled by Dr. John Murray and Dr. Gretta Wardle. The 14 lectures deal with general problems of incidence, causation, and treatment, and include detailed clinical studies of cancer affecting various organs of the body. The investigation on operative results concerned 521 cases of cancer of the breast, of which 375 had been proved histologically to be malignant. They are divided into five classes, according to the stage of the disease at the time of operation. The most interesting records are those of the 183 patients operated on in the period 1910–13. In this group, 40 patients of all classes were alive 10 years after operation, while of the 29 patients placed in class one (early cases) 21 were alive 10 years after operation. It is interesting to note that one or two cases survived 12–15 years after operation and then died of a recurrent cancer. A small proportion of the cases still alive (7 per cent. of the total number of living cases) have a recurrence.

This book of 150 pages is apparently issued free, but the insertion of a preliminary report from the Scientific Research Subcommittee reminds readers of the financial needs of the fund being raised for cancer research in Lancashire, Cheshire, and North Wales.

THE LANCET.

LONDON: SATURDAY, JULY 28, 1928.

CANCER: VIRUS OR ENZYME?

ONE of the first sessions of the International Cancer Conference, which concluded a week ago, was given up—as was indeed proper and logical—to a discussion on the ætiology of cancer. This discussion disclosed the significant fact that wide differences of opinion concerning the origin of malignancy still exist among those who have devoted a life-time to the study of the problem. If we revert to-day to this subject it is because two of the papers read by prominent pathologists in this country and the United States of America appear somehow to have impressed the imagination of the daily press, with the result that the public has again been fed with sensational statements and demands to know what it is all about. If we turn to the official documents submitted by Prof. A. LEITCH and Dr. J. B. MURPHY to the conference—and this is the only evidence which we can consider—we find little justification for this outburst in the press. Indeed, Dr. MURPHY'S paper is mainly concerned with the discussion of a highly technical point—namely, whether the "agent" which produced the filterable tumours of the fowl is a "virus" or an "enzyme." We do not know what an "enzyme" is, we do not know what a "virus" is; they are little more than abstract conceptions made to account for certain biological phenomena. We recognise their presence by the results which they produce. The essential problem presented by the filterable tumour of the fowl is not whether the causative "agent" is a virus or an enzyme, but its remarkable specificity of action, which enables it to reproduce exactly the same type of tumour as that from which the "agent" was obtained. The bulk of Dr. MURPHY'S paper is concerned with evidence which, in his opinion, demonstrates that the causative agent is an enzyme. This evidence consists in having prepared from an active filtrate of a fowl tumour by repeated precipitation a substance which, if injected, produces again the typical tumour. In the concluding paragraph of his paper Dr. MURPHY states:—

> It is hardly conceivable that the active fraction which I have thus succeeded in obtaining, a substance purified by repeated precipitations, could carry with it through all these manipulations any living organisms or virus. To me the enzyme-like nature of the principle seems to have been conclusively established, but there may be some who would still maintain that, in spite of all, the possibility of a virus is not excluded. The final and crucial proof must be the production of the same substance from materials which certainly do not contain a virus. This has been accomplished. By similar technical procedures, I have isolated from such normal tissues as the testicles of normal fowls, not in contact with any tumour-bearing animals, a similar agent with which I have produced the typical tumour, transplantable in over 90 per cent. of fowls.

There Dr. MURPHY'S paper ends, and the reader is left breathless. It would indeed be a remarkable discovery it if were possible to extract *with a considerable degree of regularity* from the normal testes of normal fowl a chemical substance which, when injected into another normal fowl, would produce *with a considerable degree of regularity* a malignant new growth. It would not in itself solve the problem of malignancy, but would rather present us with a phenomenon of far-reaching significance in its general biological aspects. The perplexing thing is that an observer of Dr. MURPHY'S acuity of vision does not comment upon this aspect of his work, but is content to use this observation merely as an argument for the enzymic nature of the active tumour-producing principle—a matter of secondary importance. From the reports before us it seems, however, to be Prof. LEITCH rather than Dr. MURPHY who makes the wider claims for this observation. Prof. LEITCH himself has reported that on one occasion he obtained a typical "Rous sarcoma" by the injection into a fowl of a normal fowl pancreas, but that on repetition in numerous experiments he has failed to obtained this result. He has also pointed out very truly that a positive result which can only be obtained once in a large number of negative experiments must necessarily be interpreted quite differently from a positive result which can be obtained with a considerable degree of regularity. A single positive result might conceivably be used as an argument against the virus nature of the agent, although it is perhaps not as conclusive sa Prof. LEITCH and Dr. MURPHY seem to think; but until we know the percentage of successes which result from the injection of the substance isolated by Dr. MURPHY into a number of fowls, and the percentage of successes with which an active preparation can be obtained from the testis of a number of normal fowls, it is impossible to assess the *general* value of his observation. On these points Dr. MURPHY is silent, presumably because he has not done a sufficient number of experiments to justify an expression of opinion.

A MEDICO-LEGAL INSTITUTE FOR LONDON.

LONDON has no medico-legal institute, and it must be one of a few of the considerable towns in the world which is in that predicament. The ninth series of Methods and Problems of Medical Education, issued lately by the Rockefeller Foundation, gives illustrative descriptions of 24 such institutes, mostly in Europe, with accounts of their methods, together with several essays on germane topics and proposals for progress. They are for the most part substantial departments, generally attached to universities, with large buildings and staffed on much the same scale as a good department of anatomy or physiology. The two British establishments which are described (those at Edinburgh and Glasgow) are arranged on a more modest scale. A study of the whole volume cannot fail to raise the question, Why has London nothing of the kind?

The precise functions which a medico-legal institute discharges vary somewhat from place to place, but their main business is the study of violence, murder, and sudden death, and generally to deal with any pathological matters which arise in connexion with police work. The problems arising out of unexpected death are often very complex, and in some cases—e.g., murder—involve issues which are even more important than accurate death certification. Their study is a specialty, and like other specialties it demands a whole-time devotion if anything beyond a very ordinary standard is to be reached and if any fresh progress is to be made. The nearest doctor and

pathologist, though well trained along ordinary lines, may well not be competent to elucidate all the delicate problems which legal medicine presents, and an institute staffed with experienced specialists to provide the necessary special training and knowledge. In London at the present time there is one morbid anatomist who has made himself a medico-legal expert, the bulk of medico-legal post-mortems are made by persons who may not be competent always to meet the difficult points, and there is no place where a man may get the necessary experience. What is needed so badly is a large establishment to which all the coroners' and police work will come—post-mortems, toxicology, sexual offences and the rest—and staffed with men who make it their life's work to study and know and practise the business which they have in hand. Whether it should be a university department attached to one of the larger medical schools, or in the Home Office, or under the chief medical officer of the L.C.C. is not now under discussion. The detection of crime is important enough, and the history of poisoning shows how deterrent has been the fact that the wits of those who find it out have been (as far as we know) generally a little better than the wits of those who do it. There may be a good deal of unsuspected poisoning going on, but as a rule those who meditate its practice seem to be afraid of being found out. An effective institute would promote this wholesome apprehension. But it is equally necessary that the causes of deaths which are unexpected and on the surface inexplicable should be made out as accurately as possible. The man who drops dead in the street is one of the most interesting and instructive objects for the morbid anatomist; he raises a special series of problems which are likely to be solved the sooner if he falls into the hands of those who have made a particular study of him. The frequency with which fibrous hearts are reported as fatty hearts by incompetent examiners illustrates the errors which, almost necessarily, follow the present haphazard arrangements.

Another point of importance has been emphasised by recent changes in coroners' practice. Our knowledge of morbid anatomy rests ultimately on our knowledge of normal anatomy. This we have few chances of studying and our knowledge is correspondingly meagre. Human life in western Europe is now long, and medicine is largely concerned with bodies which have passed their prime and may be degenerated. No one knows the extent of this degeneration, nor what would be found if one dissected carefully the first hundred apparently healthy persons met walking along a London street. Our only chances of getting this essential information are provided by deaths from violence, and it is as necessary that healthy bodies should be examined by the pathologists as that anatomists should have an adequate supply of material. Even with motor-cars and more than 5000 deaths per annum from road accidents, the experience of any one pathologist of violent deaths is very limited, and great advantages would accrue if they could be concentrated into a few specialised hands. Lately, to save expense, coroners have recalled the fact that their business is to find out the cause of death, and have failed to have post-mortem examinations made where that is obvious. In so doing they defeat their object more often than they may think; the real cause of death in a man pulped by a lorry may not be as obvious as it seems, and a surprising number of such fatalities show on dissection some substantial disease which is no doubt an important contributory reason why the accident has happened. But, this consideration apart, it should be frankly recognised that no opportunities of doing post-mortems on normal people should be neglected in the cause of medical science. An institute would do away with the difficulty about fees, and, one way and another, a medico-legal institute for London is a necessity which is long overdue. We are glad to see that the London County Council has promised to look into the matter and we hope its inquiry will be fruitful.

THE MENACE OF THE CLINIC.

THE medico-political issues of to-day give little opportunity for impassioned affirmations and ferocious gestures. The Representative Body of the British Medical Association, which considers these subjects for four whole days every summer, is denied the pleasures of oratory now by the conciliatory efforts of its advisers and now by the complicated nature of their proposals. But there are one or two subjects which still make the blood run faster through medical veins, and the assembly was quickened into liveliness last Saturday by picking up the scent of a possible menace to private practice. At first sight the quarry seemed unworthy of the chase, besides having the best intentions; but the meeting was unimpressed by its innocent and affable appearance, doubtless remembering that similar qualities could be claimed for the first rabbits which entered Australia. The fact that the ladies of Chelsea had politely sought the Association's advice about the best way to administer their clinic for middle-class babies or "paying centre for infant hygiene" in no way softened the hearts of those who, believing that the proper person to advise a middle-class baby about his bath, clothes, diet, and general upbringing was the practitioner who would attend him when he was ill, could not conceive the possibility that that practitioner might welcome in many circumstances a reinforcement in his task. Whilst everyone admitted that for poor people the infant welfare clinic was the best available source of information, it was felt that mothers who were prepared to pay five guineas a year for help with the rearing of their offspring would be much better advised to consult their own doctor—not only from his point of view, but from their own. The spokesman of the Council, Dr. J. W. BONE, said that it was no good trying to stop the setting-up of such clinics, and it would therefore be best to guide them along the best lines. He recommended, therefore, that the Association should define a policy that any further establishment of special paying centres should be for the purpose of education and not for treatment; and that mothers attending them should not do so without the knowledge of the family medical attendant. It may be mentioned that those responsible for the clinic, whose institution started the debate, have laid down exactly this injunction (see p. 210). Mr. BISHOP HARMAN, a member of the Council who supported these proposals, saw no objection to children attending such centres while they were in health. Dr. L. W. BATTEN ridiculed the idea of drawing a distinction between babies well enough to go to the clinic and those ill enough to see their doctor. Where, he asked, does hygiene end and treatment begin? Is regulation of diet a form of treatment, and, if not, how much weight must an infant lose before it is to be classified as sick and denied further advice at its clinic.

The steady constriction of the field of private practice is viewed by all with very natural alarm, and on Monday Dr. E. E. BRIERLEY and Dr. FORBES

expressed a general opinion when they urged immediate consideration of the steps to be taken to stop the enclosure of more and more of this field by medical officers of health, by voluntary and rate-supported hospita's, and by clinics. But for the moment we wish chiefly to draw attention to the arguments, set out in the discussion, which bear on the value of clinics to the middle-class public, not forgetting either their menace or their value to busy practitioners. Dr. CHRISTINE MURRELL made a good point when she said that the clinic medical officer has the advantage of having at his hand all the facilities afforded by ancillary organisations, but here she must have been thinking of welfare centres for poor people who need the help of such organisations and not of women whose means allow them to subscribe five guineas a year for advice on the problems of infancy. Dr. E. R. FOTHERGILL insisted that the clinic must be comparatively ignorant of home conditions, but he also was thinking in terms of those whose environment may present the chief elements of risk to health, and not of those whose family circumstances are actually those of the medical officer. The pace of work may, however, prevent the latter from getting the information he ought to have, and, in the words of another speaker, the sight of 20 or 30 similar babies in an afternoon is harrowing to the clinical soul, and advice may tend to become stereotyped unless the adviser is doing a great deal of outside practice as well. The home, said Dr. FOTHERGILL, is where a mother or a child should be treated, and anything that takes her out of the home to consult a strange doctor cannot be in her true interests. But obviously this must depend on the quality of the assistance received from the family adviser, and also on the amount of time that he has at his disposal and on his personal attitude towards pædiatrics. Many practitioners are definitely averse from the task described by Mr. BISHOP HARMAN as sitting down day after day in the home and giving advice about the washing, feeding, clothing, entertainment, and education of infants. Some of them regard pædiatrics as the most important and interesting part of general practice, but others believe that everything of importance about infant feeding can be written on the back of a postcard. While Dr. BATTEN is right in saying that it is a low view of the family doctor to imagine that he only wants to tinker with the baby when he has become sick, the fact remains that those who are keen on the care of infants, and therefore fitted to advise upon them, need not in the long run fear competition. To some the word "clinic" has become a fetish and there is an impression that such places can offer something better than an individual medical man. This is a mistaken view; the fact that the clinic tends to send practice to specialists rather than to the family practitioner is a menace, but one which under the rules of the Chelsea Babies Club is ineffective, the coöperation of the practitioner being required in the future treatment. Dr. BONE said the last word in the matter when he pointed out that the public will certainly be the judges. The resolution reported on p. 195, whilst expressing comprehensible disapproval of paying centres for infant hygiene, will never be effective if the public believes that they fulfil a genuine want.

Mr. TURNER asked the meeting where the establishment of clinics was going to stop. If we had paying clinics for infants why not clinics for adolescents, fathers, mothers, old men, and maidens? He strenuously objected to the private practitioner being made a mere funnel through which patients were poured to some specialist destination; he did not want to be "the whetstone that renders the iron sharp, being itself absolved from the duty of cutting." We agree with him that the family doctor should and must be the principal agent in medical work in this country; but the public has a right to skilled advice and treatment, and it is becoming harder and harder to combine the balanced outlook of the general practitioner with a high grade of knowledge of the more special branches of practice. Dr. H. B. BRACKENBURY was able to tell the meeting on Monday that the General Medical Council is satisfied with the teaching of antenatal examination in our medical schools, but this does not mean that the newly qualified student can offer an opinion as good as that obtainable from an experienced obstetrician—whether at a clinic or elsewhere. Paying clinics will be popular as long as they provide advice that the public feel they have hitherto failed to obtain. But all clinics have inherent disadvantages, and they will cease to be any menace to the family doctor as soon as there are enough practitioners willing and able to undertake the kind of work they do.

Annotations.

"Ne quid nimis."

PAY-BED PATIENTS.

THE Report of the Special Committee, the Pay Beds Committee, of King Edward's Hospital Fund for London, was published last week, its wide reference being "to inquire and report upon the question of hospital accommodation in London for persons prepared to pay more than ordinary voluntary hospital patients." The Special Committee consisted of the following five persons, the late Lord Hambleden, Sir John Rose Bradford, Sir Bernard Mallet, Mr. V. Warren Low, and Prof. Winifred Cullis, but from the unanimous and valuable report, Lord Hambleden's signature is sadly missing.

The Report is largely founded on the replies received to a searching questionaire addressed to those hospitals which provide for pay-bed patients within the area of operations of the King's Fund—namely, that greater London which is included in a circle whose radius is 11 miles from St. Paul's Cathedral. The evidence thus obtained from 80 hospitals, general and special, is summarised in an appendix, from which it may be gathered that the sum of pay-beds in these institutions is 1055, of which rather more than half—namely, 522—are to be found in the special hospitals. The figures will, we think, be a surprise to many who have been unaware how far the pay-bed system had increased of late, but the analysis shows great diversity of practice. There is no uniformity about the fees paid, nor do the charges always cover the same services, nor are the arrangements, speaking generally, comparable; but it is perfectly clear that the demand of the public for these beds under one set of conditions or another is quite unsatisfied, and many witnesses testified to the Committee that a far larger provision of pay-beds is necessary as a valuable adjunct to all forms of practice. A classification of those who would be suitable for admission to pay-beds will be found in the Report, and all must recognise that the time when hospitals were only called upon to provide comparatively simple treatment for the necessitous poor is gone by. The Report says that "with the development of expensive methods of treatment in diagnosis a large number of the middle and professional classes are now unable to pay the full cost of services, some of which are often difficult to obtain outside hospitals." This is a moderate statement of a case which need not be set out at length in these columns, so often have we pointed to the fact that while the rich can buy

and the poor can be supplied with the best medical and (especially) surgical skill in times of emergency, the middle-class group of the community enjoys no such good fortune.

The general message of the Report is that a shortage of pay-beds exists and that it can be best met by a steady extension of existing hospitals or provision of separate hospitals, in both cases a scale of inclusive fees being arranged in proportion to the accommodation required. These recommendations, it will be seen, postulate the expiry of a good deal of time before the present situation can be met, though a mutual insurance scheme is suggested as a ready method of beginning the work. As might be expected from the origin of the special committee, the Report indicates where provision of pay-beds under proper administration can be turned into a source of legitimate revenue for the voluntary hospitals thus strengthening them in their charitable work.

SCIENTIFIC SOCIETIES AND INCOME-TAX.

SCIENTIFIC and professional societies, dependent for their financial existence upon the fluctuating subscriptions of their members or upon past savings, are keenly alive to the liability of their funds to income-tax. Not long ago the funds of the General Medical Council were refused exemption,[1] and now two recent revenue decisions, delivered upon the same lines, have again gone in favour of the Crown. It is high time that the many societies and bodies of this nature took counsel together and made some concerted effort to obtain protection for funds mainly devoted to professional education and scientific research. It is true that these funds are often in part concerned with the organisation of a profession and the qualifications and examination of its would-be members. But it is also true that the country, as a whole, obtains benefit from the creation and maintenance of high professional standards. There is probably no general desire that any funds relating to any form of education should be taxed; there was never a louder call than at this moment for the mobilisation of scientific knowledge in the interests of depressed industries; the yield, moreover, from the income-tax levied on professional and scientific associations must be comparatively trifling.

In order to escape liability for income-tax, a society must be "charitable" within the meaning of the Income-tax Acts and a certain statute of Elizabeth. Legally the advancement of learning is a charitable object, but legally there is no exemption unless the society's funds are devoted not only to charitable objects but to charitable objects only. In respect of the Geologists' Association (one of the two bodies upon whose liability Mr. Justice Rowlatt has lately passed judgment), the Commissioners said that the main function was the combination of members for scientific purposes and mutual improvement and the giving and receiving of instruction among themselves. Naturally these studies, pursued by the members in coöperation, tend to the increase of knowledge and indirectly to the promotion of education generally as well as other objects of public utility. But, while admitting this element of public benefit, the Commissioners nevertheless held that the Association was not a body established for charitable purposes only. They therefore disallowed the claim for exemption, and on appeal Mr. Justice Rowlatt has upheld them. He says they might have decided either way upon the facts, but he declines to say they had no material for deciding in the way they did. He interprets their decision as meaning that the Geologists' Association has for its main object merely instruction inter se: this object has a reaction upon the advancement of learning at large, but this element is not strong enough to take the Association out of the category of a purely private society of private individuals. The other recent case (the appeal of the Midland Counties Institution of Engineers), Mr. Justice Rowlatt thought even clearer. He quoted with approval Lord Watson's phrase in the Civil Engineers' case (decided some years ago), to the effect that exemption depends upon the intrinsic character of the object which a society promotes, and not upon the scope of the benefits which may result from its transactions. When one comes to consider, added Mr. Justice Rowlatt, the inevitable issue whether the purposes of a society are charitable and charitable only, the question which emerges is this: "Is there so much personal benefit to the members, intellectual or professional, as to be incapable of being disregarded?" It may be a substantial object of the society that its funds should benefit the members intellectually or professionally. This use of the funds will have the further object of benefiting the public by calling greater knowledge into existence. But, if the two objects are there, then the funds are not exclusively devoted to the one object. In both these recent cases the Commissioners, whose duty it is to find the facts, have held that both the two objects were present. As the like result may be expected in the case of all similar bodies, and as the refund of income-tax is now being withheld, it is not surprising that the subject is attracting attention in the daily press. Why, it is asked, should exemption from taxation be confined merely to philanthropic bodies? Why should there be no relief for the institutions which represent applied science? These institutions do not devote their funds to the personal enrichment of their members. They contribute to the development of national education, health, and industry. It is probably impossible for them to separate their funds and functions in such a way as to preserve from tax that side of their activities which is exclusively "charitable," while admitting liability in respect of those other activities which are concerned with the non-charitable element of benefit to members. The time has surely arrived for abandoning the dependence of our income-tax law upon the anachronistic definition of charities in the legislation of a queen who reigned happily in an age when income-tax was yet unknown. Parliament should be pressed to frame some fresh and simple provision for the relief of scientific education and research.

[1] THE LANCET, 1928, i., 715.

VARIATIONS IN THE IODINE AND THYROXIN CONTENT OF THE THYROID GLAND.

IT has been shown by many investigators that the physiological effects produced by desiccated thyroid can be brought about by the injection of pure crystalline thyroxin. The relation of the activity of the thyroid to the iodine compounds which occur in the gland is not, however, yet clear. A study of the effect of the seasonal variations and the influence of geographic distribution on these iodine compounds has recently been undertaken by Prof. E. C. Kendall, of Rochester, Minnesota, who communicated his results at a meeting of the American Association of Physicians held at Washington last May. The importance of considering the iodine compounds other than thyroxin became apparent in the course of the investigation, for the purpose of which 100 lb. of fresh hog thyroid glands have been analysed during the first few days of each month for 20 months. Various samples of thyroid material from different parts of the United States and England have also been analysed. The seasonal variation in the total iodine, already observed by other workers, has been confirmed. In January and February 100 lb. of thyroid may contain 14 g. of iodine; in July and August as much as 40 g. This applies to glands removed from animals in the Middle West. The seasonal variation was not observed in the material obtained from England and Scotland. The amount of thyroxin in these glands has also been determined. The importance of considering those iodine-containing compounds which are not thyroxin is shown by the fact that in the summer, when the iodine is at the highest, the percentage of total iodine in the form of

thyroxin is not more than 10 per cent., and in the winter it may drop to less than 5 per cent. Thus from 90 to 95 per cent. of the total iodine in the gland is in some form other than thyroxin. The amount of thyroxin present appears also to be influenced by another factor. Many samples examined of desiccated thyroid had a high content of iodine which was physiologically very active, but from which no thyroxin could be isolated. The physiological activity was not destroyed by boiling with acid, but was destroyed by alkali. This suggested that some difference might be produced in thyroid material by permitting the fresh thyroid glands to stand, and as a result of experiments it was found that some chemical change can occur in thyroxin not only when the glands are desiccated, but when they are allowed to stand after being freshly ground. The thyroxin is chemically altered and cannot be isolated, but it is still physiologically active. Further experiments appeared to show that another iodine compound is present in the gland which is destroyed with alkali, is stable at least to some degree to acid, and has the physiological activity of thyroxin. Prof. Kendall suggests that thyroxin may be an intermediate form of the active constituent, and that it must be altered before it can become physiologically active. After the alteration has occurred it manifests the typical physiological activity of desiccated thyroid, but is too unstable to be isolated. This alteration cannot consist merely in a detachment of the thyroxin from the protein, or the thyroxin could be recovered. According to Prof. Kendall, it is likely to be some more deep-seated modification, possibly the attachment of a second hydroxyl group to the thyroxin.

THE RISKS OF SPRAYING PAINT OR LACQUER.

THE whole of the June issue of the *Journal of Industrial Hygiene* is devoted to hazards connected with applying lacquers or paints by spray. This method is rapidly replacing the painting of surfaces by hand on account of the enhanced economy of work and evenness of application. It is associated with risks for the painter arising from the materials used; three substances in particular are concerned—benzene used in lacquers, lead compounds in paints, and silica in vitreous enamels. Two valuable inquiries have been made, one by the Pennsylvania Department of Labour and Industry, and the other by the American National Safety Council. A mass of information so acquired is brought together and here presented in readable form. Benzene vapour in air was determined by passing a sample through nitration acids to form dinitrobenzene; the method is described. Two hundred and ninety-one lacquer sprayers exposed to varying concentrations of benzene vapour were examined, and also 266 sprayers of other materials. First, a stimulation of all blood-making organs, but without increased hæmoglobin, was detected, followed by the usual benzol picture of relative lymphocytosis, but absolute leucopenia, with progressive decrease in red cells. Protection is only to be obtained by limiting the amount of benzol used in lacquers to 0·5 per cent. Lead absorption from sprayed paint was detected among 253 workers. It is recommended that the practice of spraying paints or lacquers containing over 1 per cent. of lead be discontinued, or carried out only when adequate air movement of 150 to 200 ft. per minute past the worker towards an exhaust duct is provided. Indications were obtained of a definite silicosis hazard from spraying vitreous enamels on to metal sheets and castings preparatory to firing; 84 sprayers of such enamels were X rayed, of whom 12 per cent. showed definite silicosis and the other 17 per cent. suspicious indications. The need is stressed for routine medical examination of all workers employed in spray coating with materials containing benzol or lead, or with silica in vitreous enamel coatings.

CEREBRAL GLIOMATA.

IT has been a commonplace of pathological histology for many years that the series of tumours which arise from white fibrous connective tissue reproduce the various stages of development through which fibrocytes pass. At one end of the series is the round-celled sarcoma, in which the infant connective tissue cell persists permanently without undergoing any further differentiation; at the other end the fibroma, composed of the mature form. Two or three years ago Dr. P. Bailey and Prof. Harvey Cushing, of Harvard, pointed out that the group of tumours generally named "glioma" exhibit the same kind of series and between them produce all the embryonic phases through which the developing nervous system passes. They also pointed out that differences in structure were correlated with differences in clinical history; tumours which reproduce the adult or near adult stage differ from those of more embryonic structure in the same way, though not to the same degree, that fibromas differ from sarcomas. Morbid anatomy is generally pretty much the same all the world over, but it is interesting to have these ideas worked out on London tumours. This has been done by Dr. E. A. Carmichael working with 75 specimens accumulated at the National Hospital; his results are published in the current number of the *Journal of Pathology and Bacteriology*, a notice of which appears on p. 172. On the whole he fully confirms the results of Bailey and Cushing. At the same time, he points out that many tmuours are not composed wholly of one type of cell and that it may sometimes be almost impossible to assign a given tumour to any one of their types. It is, of course, equally true that many sarcomas are neither round-celled nor spindle-celled, but a mixture of the two, and to expect tumours of any kind to fall precisely into any series of pigeon-holes is to misconceive their nature and characteristics. The common tumours of the brain represent one stage or another of developing neuroglia, and Dr. Carmichael proposes that for practical purposes they should be divided into two main groups. The *spongioblastic* tumour is made up of a type of cell too embryonic to show any definite neuroglia fibrils; it is often degenerate and causes a reactionary gliosis in the surrounding normal tissue, and hence it is very obvious on naked-eye inspection; it occurs generally in people over 40, has a rapid clinical course, and causes focal signs before general pressure symptoms. The *astroblastic* tumour, on the other hand, is composed of a more adult type of cell with more or less developed fibrils; it is much less vascular, less prone to degeneration, causes no reactionary gliosis, and therefore looks very much like normal white matter and is quite ill-defined macroscopically; clinically, it occurs in rather younger people, has a longer course, usually causes pressure symptoms before focal signs, and is more amenable to surgery and radiation. For the present, at any rate, the refinements of cerebral tumours are for the specialists, but we seem to have here a plain advance in diagnosis and prognosis which should find its place in general medicine.

HOSPITAL COÖPERATION.

WHEN, as appears to be inevitable before long, the boards of guardians are abolished and their functions handed over to the county and town councils, the difficult problem of coöperation between the voluntary and the municipal hospitals, or poor-law infirmaries, will become urgent. Some form of coöperation there must be if waste and overlapping are to be prevented, and it is only reasonable to expect that the representatives of the voluntary institutions should be prepared with proposals likely to appeal to the practical common sense of the country. In Scotland the representatives of the voluntary hospitals have for some time past been in consultation on the subject, and have been asked by the Scottish secretary to form a committee and frame their suggestions. We have received a letter from

Lord Londonderry, the president; Sir Frederick Eley, the chairman of the Council; and Mr. R. Roy Wilson, M.P., the chairman of the Weekly Board of the Chelsea Hospital for Women, which has been issued to the press, both medical and lay, and in which they place before the London hospitals the importance of taking a similar course, on the ground that it might be of appreciable assistance to the Minister of Health, if these institutions became articulate. The advice is sound, and the sooner it is acted upon the better. It is highly desirable that the voluntary institutions should define their attitude and make their considered proposals without serious delay. The present Minister of Health is so well affected to them, and realises so clearly their value as part of the machinery of the national health, that he would undoubtedly welcome a clear and authoritative statement of what seems to them to be desirable and practicable in the way of utilising those poor-law hospitals which, although they every year become more efficient, are not invariably utilised to their full capacity. Two hospital services side by side are becoming something worse than an anomaly, and every effort ought now to be made to prevent the permanence of such a state of affairs, or the emergence of anything in the nature of a State service to the prejudice of a voluntary one.

The British Hospitals Association has here a great opportunity. It falls naturally to it to tap the opinions of the many distinguished experts who administer the London hospitals and perhaps to follow up that step by initiating a similar inquiry in the provinces. As the greatest hospital centre in Europe, the capital must needs come first, but outside its bounds there are many curative institutions, any one of which is individually almost, if not quite, as important as the biggest of the metropolitan hospitals. Such an inquiry as that suggested will not reveal unanimity, but there is little reason to doubt that it would provide the materials for a workable consensus. Advocates of the nationalisation or municipalisation of the entire hospital service know quite clearly what they want and are determined to press for it, notwithstanding its certain enormous cost and its very problematical advantages. They can best be met by a workmanlike scheme which will bring the rate-supported hospitals into friendly inter-relation with those which depend upon the voluntary support of the public. This should be easy under a scheme which would enable the former to be more completely utilised while stimulating the latter to systematise its finance. For constant and often passionate appeals lend much colour to the impression, so sedulously cultivated in some quarters, that the voluntary system is always standing precariously close to the abyss of bankruptcy. How far that impression is from the truth cannot be too clearly or too widely proclaimed.

HEREDITARY AURICULAR FISTULÆ.

SMALL congenital fistulæ opening on the pinna or in its immediate neighbourhood are not excessively rare, and seldom cause trouble to those whom they affect. They are usually referred either to incomplete fusion between the small tubercles which form the outer ear, not a very satisfactory hypothesis, or to a "branchiogenic" origin of an indefinite sort, an explanation which is definitely unsatisfactory—in fact, wrong. Even if the condition could be shown to be associated with some mal-development in the pharyngeal arches, the arches concerned do not correspond with the branchial arches of gill-bearing vertebrates; these are represented by the third and following arches in the higher embryos, whereas the first or, maybe, the second, are the only arches within whose regions the fistulæ in question can be put. If it is thought absolutely necessary that a piscine nomenclature should be used, the operculum could be dragged in less objectionably, for there is some reason for associating the pinna with the operculum, but none whatever for putting it among the gill-bearing structures. Prof. E. Starkenstein,[1] of Prague, has recently published a short account of specimens of this affection in his own family, of which he has the advantage of possessing records going back to the fourteenth century. The hereditary nature of the condition is clearly brought out in this unusual contribution, and is illustrated by two "trees" extending over three or four generations. Although the families are prolific enough, the numbers given are, of course, too small to permit of any valid conclusions bearing on the laws of heredity; but it can be seen that sex is of no deciding value, that every incidence is immediately preceded by incidence in one or both parents, and that the affection may be one-sided or bilateral. A photograph shows a left ear with a small opening on the front part of the down-turned anterior end of the helix, above the level of the crus helicis. About three-quarters of an inch in front of this and below it is a small swelling, marking thick secretion gathered in the blind end of the track, from which it can be squeezed. The situation described here does not appear to come into line with the normal development of the outer ear, but it is quite easy to imagine a slightly abnormal formation of the second and third auricular tubercles affording a foundation for it, and it would seem that the condition might be put into that very large class of malformations in which the developmental processes must have been on abnormal lines from their inception, and which cannot be harmonised with what occurs in normal formation. However this may be, Prof. Starkenstein offers to students of such matters a class of material which is rarely encountered, and which, in all probability, will well repay close study.

CARE OF THE HEALTH OF MERCHANT SEAMEN.

FOR many years we have been calling the attention of our readers to the health, accommodation, and sanitary conditions of the men of the mercantile marine, and have been able more than once to report the advances that have been made on their behalf; but we feel that improvements are not proceeding rapidly enough and that sanitation is not progressing as fast at sea as on shore. There are two great impulses to improve sanitation, and neither is at its strongest at sea. Insanitary environments are brought to notice by a rise in death-rates or by the absence of fall of death-rates as rapidly in some as in other areas or trades; and as regards housing the death-rates that arrest attention may be, and often are, those of women and children, more susceptible and more continuously exposed to the evil conditions than are their menfolk. Such impetus to improvement does not help seamen, for the Board of Trade no longer publishes death-rates for them, while they live their lives and do their work apart, with no numerous attending crowd of women and children to act, like the white mice in submarines, as sensitive indicators of disaster. Another impulse to improvement is public opinion, and seamen derive little or nothing here. Thus visitors to areas of back-to-back houses are at once shocked, and, loudly contrasting what they see with the amenities of their own districts, awake locally a spirit of reform. But the ships are at sea or in docks, and in these regions, far from ordinary observation, escape public criticism; indeed if this were not so, the accumulation of refuse on board ships in dock, of which port medical officers complain, could not go on being repeated, nor could the old hand-flushed latrines of merchant ships have so long persisted if those accustomed to modern "sanitation" had made frequent visitations. Large passenger ships give their crews small cause for complaint; the trouble is in the tramp and coasting ships with small crews and, let it be admitted, small space. Nor must we forget that all improvements must be at the expense of the owners, and do not as on land bring in increased rent. The owners no doubt vary largely in their sense of responsibility, but medical opinion is dead against the employment, as an argument for nothing being done, that the men have all they require.

[1] Med. Klin., May 4th, p. 701.

The men are not good judges, and well contrived plans for sanitary improvement might often be received with apathy if not obstruction by those from whom their meaning was hidden. Seamen present special difficulties. They are young and strong, but those disabled by bad sanitation drop out of employment and are no more seen, and it is the duty of no one to tell their friends that they were victims of unhygienic conditions which they themselves had never reprobated. So the men do not realise their handicap, yet their death-rate is higher (50 per cent. the Registrar-General has said) in the mercantile marine from disease than that of the ordinary English citizen.

The picture is improving. The men are better off than formerly; food and cooking are better; we learn from Dr. Mussen, for example, that the newer and larger ships at Liverpool are having crew spaces aft, hospital cabins, and washplaces. Yet Dr. Howard-Jones and others of experience tell us that in foreign ships more cubic space is given to the men and more attention is paid to cleanliness *compulsorily*, while similar benefits are only *permissive* in British ships. Some port medical officers find that the prevalence of vermin proves the men careless, but their difficulties are becoming recognised. Their employment is intermittent; not even when employed are they well paid; consequently, they live often in the poorest lodgings of seaport towns, they are still apt to be preyed on by harpies, and all their possessions are in a bag which they carry to their next abode, their ship, which changes perhaps four times in a year. What is there here to raise their standard of comfort or conduct? Fleet Surgeon Home told us recently that the disease-mortality that has decreased most among them in 25 years is that from alcoholism (0·9 to 0·2); does that not argue self-control? They seem to have more deaths from enteric than have other men, and the Registrar-General says their death-rate from violence "is quite beyond the range of land experience." An old Elizabethan song probably expresses the views of all:—

> "We care for the merchantmen,
> Who do our State maintain."

But do we care enough? If so, why do we leave their health in the charge of the lay Board of Trade? Why have we no one at the Ministry of Health to summarise annually the excellent reports of the medical officers of health of the port sanitary authorities, the only doctors who see the seamen and their conditions, and who can tell us what they really need? We congratulate Fleet-Surgeon Home and Alderman Askew on having sponsored a unanimous resolution at the recent Congress of the Sanitary Institute that this transference of responsibility should occur.

THE ORTHOSTEREOSCOPE.

OF all the uses to which an X ray plant can be put the most indispensable are the diagnosis and treatment of fractures and the location of foreign bodies. It is precisely here, also, that an inefficient plant gives most disappointment, and that the limitations even of a clear and well-defined shadow-picture become obvious. The search for a needle in a heel can still be almost as wearisome as in the days when its very presence was unconfirmed; while, unless views are taken from many angles, which is not always convenient, the evidence that manipulation has restored alignment of bones after fracture may be deceptive. An apparatus that indicates the depth of a foreign body or shows the planes in which the fragments of a broken bone are lying, would meet the one demand which even an elaborate and efficient plant has hitherto been unable to satisfy.

In THE LANCET of April 14th, under the title of Stereoscopic Radiography, we noted that an apparatus has been designed to give true stereoscopic projections in the fluorescent screen. We have lately had the opportunity of testing this apparatus and are impressed by the effect obtained. A limb is seen in perfect detail with the position and relation of the component parts in a true perspective. The projections and depressions on the bones are clearly visible; the limb looks as if it were made of more or less transparent material. No effort of eye or imagination is required in order to get the stereoscopic effect, and the image obtained is sharp. The apparatus is extremely compact and is remarkably easy to control. The amount of radiation falling upon the patient is little, if at all, in excess of that necessary in the usual type of apparatus. Protection appears to be satisfactory and the workmanship throughout is good. Without an extensive trial of the apparatus it is impossible to estimate its scope or its limitations. Certainly for fracture work and the location and removal of foreign bodies it will prove invaluable. The diagnosis of the position of a gastric ulcer, or of the site of obstruction in the intestinal canal, might well be rendered easier by a stereoscopic view. As to the radiology of the chest, we understand that several famous continental chest clinics have installed this apparatus. It is used in the upright position, and the screen may be viewed from any convenient distance. Ordinary radiograms can be taken, and a special carrier is available whereby two stereoscopic X ray photographs may be taken within one-tenth of a second of each other.

The Orthostereoscope is installed by Stereoscopic X-Rays, Ltd., of 67A, Baker-street, and will be demonstrated to members of the medical profession by appointment.

THE EFFECT OF EMOTION ON BASAL METABOLISM.

AN attempt to study the effects of emotion on basal metabolic rate, pulse-rate and blood pressure is recorded in a concerted study[1] by Dr. H. L. Segal, Dr. H. F. Binswanger, and Dr. S. Strouse of Chicago. The emotional stimulus chosen in all cases was the dread of impending operation and the patients studied were divided into three groups; the first consisted of ordinary operative cases, the second of patients with hyperthyroidism who had received preoperative iodine therapy, and the third of patients with hyperthyroidism who had only received iodine in insignificant amounts or had had none at all. These patients had been in hospital for varying lengths of time and their basal metabolic rates had been determined. A test was done on the morning before the day of operation, and another on the actual day, and observations of the pulse-rate, blood pressure, and emotional state were made at the same time. In the first group no constant relation was found to exist between these factors, and the rise in the metabolism on the morning of operation was negligible. Of the 12 patients in the second group, only five showed outward evidence of emotional disturbance and the increase of basal metabolism on the morning of operation was slight or non-existent. In the third group, in order to make fair comparison with the other two, the patients were informed on a certain evening that operation would take place on the following morning, but when the morning basal metabolism test had been done operation did not take place. In this group all cases were found to have an increased metabolic rate on the morning of operation, the minimum increase being +12 per cent., and the average increase for the six cases in the group being +41 per cent. The authors consider that this increase is due to an increased production of epinephrin rather to an increased secretion of thyroxin, because the return of metabolism to normal after the fright stimulus had been removed was so rapid. A thyroxin reaction lasts days or even months. The reaction shown would be consistent with increased heat production due to epinephrin, for this is immediate and transient. The authors suggest a practical use for their observations, in that a rise in the basal metabolic rate on the morning of operation might indicate that an insufficient dose of iodine had been given.

[1] Archives of Internal Medicine, June, 1928.

TRANSMISSION OF FILARIA PERSTANS.

THE tradition that a doctor in the tropics must be observant of the strange phenomena of lesser and unregarded living things which the chances of general practice may bring under his eyes was founded by Patrick Manson. His infectious zeal for inquiry enthused his Chinese hospital dressers, and with their eager help, he made those famous observations on the development of *Filaria bancrofti* in the mosquito which formed the inspiring beginning of the modern science of tropical medicine. The example set by Manson has been followed by disciples of every nation, who though busy, like him, with the press of daily clinical duties, have yet managed to add to our knowledge of parasitology. Dr. Dyce Sharp, in the Cameroon has, almost as if on holiday, carefully observed and engagingly described the domestic affairs of gorilla and family. Moreover, with the simplest of material equipment, he has made valuable additions to knowledge in Manson's own subject of filariasis.[1]

In 1890 Manson found two new filarial embryos in the blood of a negro in the London Hospital who was suffering from sleeping sickness, and named one of these *perstans*. In 1898 the adult *perstans* was found in the mesentery of a Guiana aborigine by Daniels. In 1904 Bastian set out that any metamorphosis which *perstans* might undergo did not require an intermediate host for the purpose. Nevertheless Low, and later Fülleborn, conducted experiments with various mosquitoes, and with flea, lice, and tick, with negative results; except that both noted some development in the mosquito. The systematists were also at work. The proper classification of the worm gave rise to some discussion, and was disposed of only in 1926, when Yorke and Maplestone pointed out that Diesing had differentiated the genus in 1861 under the name *Dipetalonema*. So *Dipetalonema perstans* it must be; but for convenience, however, it is still referred to as *Filaria perstans*. The parasite is found in tropical Africa, and also in British Guiana and in New Guinea. Its principal area coincides with the chief habitat of gorilla and chimpanzee, in both of which apes it has been found. The adult worms are found usually in the root of the mesentery or in the perirenal tissues. The embryos appear in the peripheral blood by day and night, with a tendency to relative day or night periodicity. No more can be said than that in most cases the infestation appears to be harmless.

This was the position when Dr. Sharp began his investigations. In the Mamfe district of the Cameroon the incidence of infection is at least 92 per cent. of the native population. Dr. Sharp found *perstans* to be comparatively rare in the European, who to-day invariably uses a mosquito net at night. He reasoned that the vector of *F. perstans* must have far less opportunity of attacking the European; and since day-biting flies and night-biting mosquitoes attack black and white races impartially when these are unprotected, it was probable that the mosquito net was not the sole barrier against infection, but that the vector must also object to light even at night; for in no other way would the white man be protected while playing cards at midnight—an occasion when mosquitoes may be very active. Dr. Sharp asked his native servant, Kofi, if he knew of a small fly which bit at night only and did not readily pass through a mosquito net, but which must be very common in that region. Kofi quickly produced a very small fly (*Culicoides austeni*), which later proved to be an efficient vector of *F. perstans*. His master discovered in Kofi "a natural fly expert who never forgot or forgave an insect that bit him." He could distinguish by sight various species of culicoides. He knew them well. They fed only at night, and then only in the dark, and their needle-like prick was quite unlike the bite of mosquito or sandfly. Kofi had had to keep fire or lamp alight in his room at night to avoid their bites—then he had made himself a calico tent instead, under which he slept. From this tent, however, Kofi produced next morning 18 of these small flies (*Culicoides austeni*), all full of his blood; the females only are blood-suckers. And so the experiments began. Dr. Sharp declares they were carried out largely by Kofi's enthusiastic and untiring help, his amazing powers of observation, and his first-class vision—a necessity for seeing and catching these minute flies. *Perstans* embryos were found in Kofi's blood, and also in that of the two other house-boys. All these and a fourth, Peter, joined willingly, as helpers and experimental material, in the game of this friendly excursion in natural philosophy conducted in a bungalow in the steamy heat of the Cameroon. Peter was chosen for principal reservoir of *perstans* larvæ, and ready bait and feed for the culicoides vamps. *C. austeni* was discovered to be a determined night-biter—but darkness was essential. A lamp, giving a quarter of a candle power in a 7 ft. long tent was sufficient to discourage her advent. Wind deterred her, rain did not; a full moon gave almost complete protection from her. Captive culicoides were induced to feed in the day time by making the room dark and offering them an arm. Dr. Sharp's white arm was refused, though a black arm was eagerly bitten. A very high degree of humidity was found to be essential to the well-being of the fly and the development of her ova. Dr. Sharp undertook the difficult task of examination and dissection of the culicoides (1·5 to 2 mm. in length) at intervals of time after their infected feeds. He found that in *C. austeni* the *perstans* larva undergoes, in eight days, an ordered development through short thick forms to one thinner form three times its original length. At this stage the larva has reached the fly's proboscis, and escapes thence by stretching and finally bursting the terminal membranous portion of the labrum. Seven per cent. of "wild" culicoides were found to be infected. There is, therefore, strong presumptive evidence that *C. austeni* is an efficient transmitter of *F. perstans* from man to man. Dr. Sharp's observations make it probable that *C. grahami* is also a natural vector of *perstans*. In the Mamfe division of the Cameroon the forest has given way to low orchard scrub or open grass land, and the streams are torrential and tend to dry up after the rains. It is probably the most heavily infected with filaria of any district in the world, though *F. bancrofti* is rare. Dr. Sharp has shown that apart from blood infection, infection of the skin itself with filarial larvæ is very frequent in the natives of all ages and both sexes. It was common to find natives under 16 years of age showing simultaneous infection with leprosy, yaws, *O. volvulus*, and *F. perstans*. The pathogenicity of the latter is not known, but in view of the notably low health condition of the population it is difficult to exclude this high degree of parasitism as an accessory factor of general unfitness.

[1] *Filaria perstans*, its Development in *Culicoides austeni*. Filariasis in the Cameroon, with Special Reference to Skin Infection by Microfilariæ. Trans. Roy. Soc. Trop. Med. and Hyg., vol. xxi., No. 5, February, 1928.

A PARATYPHOID OUTBREAK.

THE clinical details of the outbreak of paratyphoid fever which occurred in certain districts of Hertfordshire in November, 1927, were recorded in THE LANCET of Feb. 25th last by Dr. Iris Ward, house surgeon at the West Herts General Hospital, to which 43 of the cases were admitted. The prompt steps taken to ascertain and remove the source of infection were successful in limiting the epidemic to 166 cases. In a report[1] to the Minister of Health published to-day Dr. W. Vernon Shaw, one of the medical officers to the Ministry, sets out the details of the story from Nov. 15th, when the Minister received unofficial intimation of the presence of an epidemic of enteric fever in the Hemel Hempstead and Watford districts, until Nov. 24th, by which time 133 patients were safely isolated in hospital, and their homes disinfected and cleaned. On Nov. 16th, the day after his first visit to the district, Dr. Shaw had already elucidated the

[1] No. 53. 1928. H.M. Stationery Office. Pp. 16. 3*d*.

mystery, and from this date onwards no further spread of infection occurred. The population of the actual area invaded is about 21,000. Bacteriological examination of the water, which is mainly supplied from public sources, yielded satisfactory results. Arrangements for excrement removal, sewage, and refuse disposal are for the most part on modern lines. In the ten years prior to this epidemic there has been little prevalence of enteric fever, either typhoid or paratyphoid, except for an outbreak limited to the inmates and attendants at one of the Metropolitan Asylums Board's Hospitals in Watford Rural District in 1926. During the last week of October, 1927, and the first week of November many cases of illness occurred. These were at first diagnosed as influenza, but on Nov. 11th notifications of enteric fever began to reach the medical officer of health for the districts concerned. In all 129 houses were invaded. In almost every case notified the Widal test gave positive results to paratyphosus B, and the same organism was identified in the urine and fæces of a number of patients. No deaths occurred. Inquiry showed that throughout the infected area the only factor common to the persons affected was milk delivered to them by a retailer whose premises were situated in the borough of Hemel Hempstead. Dr. Shaw visited all the farms on Nov. 15th and could only discover any recent case of illness at W. farm, where one child, K. X., was ill with "broncho-pneumonia." A specimen of blood taken from this child gave a positive Widal to paratyphosus B, and on Dr. Shaw's advice he was removed to hospital with her mother, Mrs. X., on Nov. 16th. The latter within a few days of admission developed a metastatic abscess of the left breast. Her fæces and that of the child were heavily infected with paratyphosus B, and a specimen of her blood reacted with this organism up to a high titre. Mrs. X. admitted having suffered from diarrhœa on or about Oct. 10th, and is regarded as the source of the epidemic. It emerged that from Oct. 23rd onwards she had not only been washing the milk utensils, cooling the milk, and occasionally even milking, but also nursing the sick child, and the potential infection of the milk was doubtless increased by her close contact with the excreta of the child. Pasteurisation of milk at the premises of the retailer was commenced as early as Nov. 12th and was followed by a rapid diminution of the number of fresh cases of paratyphoid fever; but, according to Dr. Shaw, too great reliance was placed on the pasteurisation, which was carried out in a rough-and-ready manner. In the course of the epidemic five roundsmen developed paratyphoid fever, and it is fortunate that none of them appears to have been responsible for personally disseminating infection in the course of delivering milk on his rounds. After the removal to hospital of Mrs. X. and her child on Nov. 16th, further stoppage of the milk from the farm did not appear to be necessary, since other members of the household were examined for infection with negative results; the fact that no further cases occurred justified this policy. Dr. Shaw acknowledges the assistance received from the county medical officers of health, the practitioners of the district, and the officials of the various sanitary authorities concerned.

The chief lesson to be learnt from the epidemic is the need for immediate laborious investigation in such circumstances of any history of sickness occurring at a dairy farm. Previous to Nov. 16th the child's symptoms had been attributed to the respiratory system and the mother's own mild attack of diarrhœa, which must have been the first manifestation of the infection, was only recalled to memory after the most searching inquiry.

Dr. Ambrose Owen has been awarded the Sir Charles Hastings Prize of the British Medical Association.

Dr. E. K. le Fleming (Wimborne) and Dr. J. W. Bone (Luton) have been selected by the British Medical Association as their candidates for the two vacancies as Direct Representatives of the Medical Profession on the General Medical Council.

Special Articles.

INTERNATIONAL CONFERENCE ON CANCER.

JULY 16TH–20TH, 1928.

(*Continued from p. 143.*)

SURGERY AT THE CONFERENCE.

THE Surgical Section at the conference organised by the British Empire Cancer Campaign had before it two principal subjects for discussion; the first of these was the classification and treatment of bone sarcomata. The forms of sarcoma affecting bone are many and the need for a convenient classification is great. Several of the surgeons from the United States of America described and praised the classification which was devised by Dr. Codman, for the purpose of a Bone Sarcoma Registry; this registry is now under the care of the American College of Surgeons, and to it are sent particulars of cases of bone sarcoma from all parts of the United States. The reports, including the clinical course, the operations, and the microscopical findings, are carefully examined and the cases classified, so that in time there will be collected a large amount of knowledge of a rather rare condition, of which most surgeons see only a few cases. This excellent plan might well be followed in this country, as there is certainly a great need for more knowledge on this subject. At the present time the most diverse views are held as to the nature of some of these tumours; for instance, there was a wide difference of opinion as to the malignancy of the tumour generally known in this country as a myeloma, for more than one American surgeon described it as truly malignant, while several British surgeons declared that, though malignant forms do occur, yet as a rule it is benign, and may be treated successfully in almost all cases by local removal. One speaker objected strongly to the name myeloma, and held that it grew from the endosteum and from osteoblasts, and therefore he suggested that a more suitable name would be osteoblastoma. On this the opener of the discussion stated that he did not believe in the existence of an endosteum; he had never seen it, and the most careful examination had failed to find it. All, however, were agreed that, if an improvement in the results of the treatment of the more severe form of sarcoma of bone can be achieved, it will be only by a recognition of the existence of the disease at a very early stage, and this is only possible if attention be paid to any persistent pain in a bone. If such a pain should fail to respond to simple treatment, it is certain that a radiograph should be taken, and the presence of a bone sarcoma may be revealed. In an early case such as this it may be possible in one way or another to treat effectively the sarcoma, while it is still confined to its site of origin. It may be that experience will show that radiation is the most efficient method of treatment, but it is agreed by all that in the vast majority of cases the early recognition of the disease is essential.

The second subject was the early recognition and treatment of cancer of the stomach. Here also the general cry was: "Let us see these cases early and it will then be possible to find the disease in a condition in which we may be able to remove it completely and so to prevent any recurrence." The same demand for early recognition of malignant disease and thorough treatment has long been made in the case of the breast, and the excellent results obtained with mammary cancer can only be had in cancer of the stomach if the cases are seen early by the surgeon. This can only occur if it is recognised by all that persistent indigestion in a person over 40 years of age should be taken as a sign that something more than mere "indigestion" is present, and that a

thorough examination should be made by the use of all the facilities provided by X rays and other diagnostic methods. The skilled interpreter of radiographs will be able to recognise at once, in most cases, whether a simple ulcer or a malignant growth is present. The statistics provided by several speakers showed how delay in the recognition of cancer of the stomach prevented in many cases any chance of the complete removal of the growth and the neighbouring lymphatic glands; in one series of cases, quoted by Prof. Wilkie, there were admitted into the Royal Infirmary of Edinburgh 675 cases of carcinoma during five years, but of these in only 60 cases was a radical operation possible. Early recognition is essential if any real improvement in the results is to be obtained. The later the operation the wider must be the excision and the more severe the operation, with an increase in the shock, and in the likelihood of thoracic and abdominal complications.

There was a little diversity of opinion as to the relation of carcinoma to simple ulcer of the stomach, but most of the speakers agreed that if chronic gastric ulcers were treated by excision, the number of gastric cancers would be reduced.

CANCER AND THE PUBLIC HEALTH.

THE discussions on the public health aspects of cancer on the last day of the Conference revealed a mass of painstaking labour. The achievement, however, was rather that of getting rid of unprofitable theories than in advancing new propositions. An immense amount of useless lumber has been cleared away in preparation for the edifice which will ultimately arise, but it is clear that the foundations of the future edifice are not yet dug.

The first discussion concerned geographical and racial prevalence of cancer. Certain facts were clearly brought out. One of the most important was the difference in mortality from cancer of the breast and uterus among the women of England, Holland, and Italy. For cancer of the breast the death-rate in the Netherlands is a little over one-half that of England and Wales, and in Italy it is about one-half that of the Netherlands. Another point is, that while the death-rate from other forms of cancer is substantially correlated with mortality from non-cancerous diseases, no reliable correlation can be discovered between cancer of the uterus and breast and fatal non-cancerous conditions. Prolonged and exhaustive inquiries from the statistical, clinical, and other aspects have failed to reveal the cause of these discrepancies. They are not due to differences of age or constitution, or to the proportions of married women in the groups. Differences in treatment do nor explain them, nor do racial factors, exhaustively studied by many speakers, serve to elucidate the problem. One of the most illuminating papers was that by Dr. Sourasky on the incidence of cancer among Jews. He was able to show that race had nothing to do with it, but he explained the low incidence of cancer of the penis and uterus among Jews by their observance of the Mosaic code. The inference is that a more careful study of environment might bring an answer to some of the problems of geographical prevalence of cancer. The conclusions of most speakers with regard to racial prevalence were tentative owing to insufficient data, but the consensus of opinion was that race could not be invoked in explaining the distribution of cancer mortality.

A discussion on public action in regard to cancer should have as its corollary recommendations on action to be taken. The public naturally want to know what is to be done. What practical answer can the conference give? A perusal of Sir George Buchanan's paper shows that the Ministry of Health is not idle, but he supplies a statement of problems, rather than a categorical answer to questions of practical politics. Indeed, to the question, how cancer can be prevented, the answer can only emerge through continuous intensive study. But, as a result of their studies, members of the conference were able to explode many fallacies such as that diet caused cancer, or that the disease does not occur in native races. With regard to prevention, the only thing which can be done is to attend to general hygiene, remove sources of chronic irritation, and treat conditions which are known to lead to cancer. With regard to therapeutics the outlook is more hopeful. Modern methods of radiation may help to induce patients to seek advice earlier by allowing them to feel that they need not necessarily undergo an operation. Notification of cancer was suggested, but most speakers felt that at the present state of our knowledge it would have no value. A proposal, which although theoretically excellent was thought by many to be unsuitable to English conditions, was the establishment of cancer clinics. There seems to be a prejudice in the minds of the British public against such places. The divergence of views on the subject of propaganda was extremely interesting. Often, of course, the views held were a reflexion of national characteristics. Sir George Buchanan was undisguisedly thankful that propaganda had nothing to do with his department. Prof. Maisin, of Belgium, insisted that the best form of public education was the education of the practitioner. Lectures and popular instructions were only secondary and must be used with prudence. Dr. George A. Soper, of New York, blazed forth propaganda—books, pamphlets, posters in 20 languages, moving pictures and radio, newspapers and "cancer weeks." He reckoned he had reached 41,000,000 people every day for two weeks by one series of newspaper articles. Dr. Reimann, who followed him with cold statistics on the time elapsing between the patient first noticing a pathological condition in the breast and coming for advice, found there was no indication that the educational campaign going on since 1914 had had any effect. The pith of the matter was voiced by the President who warned enthusiasts to beware of fussing over public health. This is a view which appeals to the British public, and whatever sensational methods may succeed elsewhere, propaganda in this country must be adjusted to the prejudices of the people if it is to be effective in influencing their mental outlook.

THE SECTIONAL DISCUSSIONS.

THE main work of the Conference was divided among a number of sectional discussions which took place concurrently in the mornings. Tuesday has already been reported, Wednesday to Friday follow.

WEDNESDAY, JULY 18TH.

CLASSIFICATION AND TREATMENT OF BONE SARCOMA.

Prof. J. EWING (Cornell), opening the discussion, at the Section of Surgery, Sir CHARLES GORDON-WATSON being in the chair, claimed that a classification of the sarcomata of bone had much more than an academic interest. The classification proposed some years ago by Codman, of Boston, who suggested the registry of bone sarcoma, was very convenient, though it was not perfect. This registry had been taken over by the American College of Surgeons. Since sarcomata of bone were rare it was only by an accumulation of the experience of many surgeons that right views could be formed of the true nature of these growths, and the best methods of treatment of the several varieties. The registry had now very full notes of over 900 cases, classified into four classes: osteogenic sarcomata (i.e., sarcomata derived from bone), giant-celled growths, myelomata, and liposarcomata. Prof. Ewing discussed the varieties and explained their relations to one another. As to treatment, Prof. Ewing pointed out that the first and almost invariable symptom of bone sarcoma is persistent unexplained pain in a bone. Such a pain called for a provisional diagnosis of sarcoma, and then a careful radiographic examination would generally detect the presence of the growth, and in this way early treatment was possible. When the signs pointed to a true osteogenic sarcoma of

medullary, subperiosteal, sclerosing, or telangietic type the best treatment was probably immediate amputation, immediately preceded, if necessary, by a biopsy. With nearly all other forms of bone sarcoma radiation competed with surgery in treatment. The more malignant the tumour the better was the response to radiation and the worse the outlook from surgery. Bulky tumours and those with much destruction of bone did not give a good result with radiation and amputation should be performed. The more malignant varieties were generally fatal with any method of treatment. If one considered the difficulties of diagnosis, the severity of the standard of treatment, and the high mortality, the conclusion must be drawn that the present-day treatment of bone sarcoma was very unsatisfactory.

Mr. W. SAMPSON HANDLEY (London) said that in the vast majority of periosteal sarcomata of bone amputation was followed by recurrence; he was inclined to think that the use of radium was the best means at our disposal for dealing with them. In one case he employed 500 mg. of radium for 24 hours and the patient was well nine years after. The surgeon must not be afraid of causing necrosis of bone if he wished to be sure of destroying the whole of the growth. Ultimately the necrosed portion of bone would be separated. In children the risk of producing necrosis was small. As to the ultimate result of radium treatment its great value was shown in one case, in which some months after the growth had been destroyed the patient found the limb so useless that he asked to have the limb amputated. This was done and the bone which had been affected with sarcoma was very carefully examined; no trace of malignant disease could be found in it. Out of four cases of osteosarcoma of the ilium three had been cured. The method of treatment was to turn back a skin flap and then a gluteal flap; the projecting mass of the sarcoma was cut off with a chisel, and a ring of radium tubes was inserted in the growth, with some other tubes within the ring.

Dr. WILLIAM B. COLEY (Cornell) maintained that in periosteal sarcoma of bone amputation was practically useless, though it might be employed with the toxin which he had devised. The toxin had a very definite value, though its use required very great care.

Mr. JULIAN TAYLOR (London) said that in order to understand sarcomata of bone it was of the greatest value to make skiagrams of thin sections of the affected bone, and he stated that in all the tumours he had examined the effects to be seen were those of invasion of the various parts of bone by the malignant tumour. That proved that a malignant stimulus had been applied and that the effects upon the various parts of the bone were essentially the same whatever the nature of the malignant growth.

Dr. CHANNING SIMMONS (Boston) praised the American registry of bone sarcoma. He stated that amputation was the best treatment in very early cases. He had found radium very useful, especially where the growth had arisen as the result of trauma.

Prof. FICHERA (Pavia) laid stress on the value of radiograms in the diagnosis.

Dr. FRANKLIN MARTIN (Chicago) explained the arrangements made of the registry of bone sarcoma, and suggested that it might be used not only in Canada and the United States, but also in other countries.

Mr. R. C. ELMSLIE (London) said that primary endosteal sarcoma was the rarest form. The diagnosis of bone sarcoma had to be made partly by the site and partly by the radiogram, but there was only one certain method, and that was by exploration and the microscopic examination of a small portion removed. He considered that in cases of myeloma curetting was a much more valuable method of treatment than many surgeons seemed to think.

Prof. M. J. STEWART (Leeds) expressed the opinion that a giant-celled tumour was a special tumour of bone. He considered it wrong to call it a myeloma, since it arises not from the bone-marrow, but from the fibrous endosteum and osteoblasts. He suggested the name osteoblastoma.

Prof. ARCHIBALD YOUNG (Glasgow) described an interesting case. A young woman had a bone tumour removed from the mandible 12 years ago. Subsequently similar tumours appeared on several bones; eight years ago some of these were removed from the ribs and elsewhere and later still similar tumours affected nearly all the bones. The skull showed Paget's disease. On microscopic examination of the tumours removed both sclerosis and rarefaction were present.

Mr. HANDLEY remarked that Coley's fluid was useful as an adjunct to radiation.

Prof. EWING, in reply, stated that he had been struck by Mr. Handley's method of removing a portion of a bony tumour and embedding radium within it.

SOME PRESENT-DAY MEDICAL ASPECTS OF CANCER.

Sir WILLIAM WILLCOX, who presided at this Section, began by calling on Sir THOMAS HORDER to open a consideration of

Cancer Cachexia.

Although, he said, there were causes enough to explain the condition, these were independent of the presence of malignant cells; the question should therefore not be judged to be solved by assumptions, however probable. He went on to put forward the suggestion that there might be something specific in the cachexia of cancer, study of which might be of service both in diagnosis and pathogenesis. In illustration of this, one had only to assume that the cancer cell might contain an intracellular micro-organism which on disintegration of the cell might liberate a toxin of specific qualities; the cachexia produced by benign tumours undergoing necrobiosis would serve as controls. Treatment, he considered, should prolong life without adding to the patient's discomforts and produce the best possible material for surgeons and radiologists to work on.

Dr. WILLIAM HUNTER remarked that the degree of cachexia was nothing now to what it was 30 years ago. He considered all sources of sepsis should be treated besides that due to the cancer itself.

The CHAIRMAN said the subject of cancer cachexia was a very important one and should be approached from the point of view of: (1) cancer toxæmia; and (2) other sources of sepsis. He added that Sir T. Horder had foreshadowed a possible specific treatment.

Sir JAMES DUNDAS-GRANT considered that the general practitioner's point of view—"How can this be cancer if there is no cachexia?"—was a dangerous one.

Alleged Increase of Cancer of the Lung.

Dr. ROBERT HUTCHISON said that the general impression amongst clinicians in recent years was that there was a considerable rise in incidence of primary cancer of the lung. He showed records of autopsies performed at the London Hospital which bore out this statement. As for ætiology he mentioned three theories: 1. The supervention of cancer on the catarrhal changes in the lungs associated with influenza, pointing out, however, that cancer of the lung began often as an acute illness and might simulate influenza. 2. Irritation of the lungs by tar dust from roads. 3. A possible connexion between pulmonary tuberculosis and cancer; this was not substantiated at autopsies.

Dr. L. S. T. BURRELL said that malignant disease of intrathoracic viscera was seen in three main groups: (1) endothelioma of pleura; (2) carcinoma of lung; and (3) sarcoma of mediastinum. He agreed that primary carcinoma of the lung had become more common of late, and said that it often started acutely owing to the growth ulcerating into a bronchus and producing collapse of lung. Diagnosis, he said, had become easier because of: (1) artificial pneumothorax enabling the relation of lung to tumour to be seen; (2) examination by thoracoscope; (3) examination by bronchoscope; (4) X ray examination after injection of lipiodol. In treatment the only possibility of cure

lay in lobectomy: X rays and radium temporarily diminished the size of the tumour.

Dr. C. POWELL WHITE (Manchester) read a paper prepared jointly with Prof. SHAW DUNN and showed slides of graphs made from records of autopsies on primary malignant growths of the thorax from Birmingham General and Queen's Hospitals, Edinburgh Royal Infirmary, Glasgow Western Infirmary, Leeds General Infirmary, London, University College Hospital, Manchester Royal Infirmary, all of which with one exception—Leeds—showed an increase in the incidence of intrathoracic neoplasms during the past 25 years.

Prof. T. SHENNAN (Aberdeen) said the occupations of the cases he had examined were varied, therefore of no ætiological value. The predominant growth was a small-celled carcinoma (the oat-seed cell type described by Barnard). In all there were areas impossible to distinguish from short spindle-celled sarcoma. He had himself come to the conclusion that the spindle shape was the result of mechanical influence on the plastic cell substance. As possible predisposing factors he suggested old-standing pulmonary disease and "gassing" during war service. Prof. Shennan then showed slides and microphotographs illustrating his paper.

Dr. W. G. BARNARD (London) showed microphotographs proving that the majority of tumours diagnosed as sarcomata of the mediastinum were in reality medullary carcinomata of lung. He said that histologically parts of a growth might show typical oat-shaped cells, but other parts of the same growth showed transition to carcinomatous tissue—i.e., polygonal cells and tendency to squamous epithelium; oat-shaped cells could also be found in carcinomata.

Dr. LEONARD HILL (London) said he had been feeding mice on different diets and had found the spontaneous cancers of the lung—to which mice were very subject—were uninfluenced by diet.

Prof. DUNCAN GRAHAM (Toronto) endorsed former speakers' experiences in regard to the increased incidence of primary cancer of the lung. He considered the sudden onset of symptoms were due to ulceration of the growth into a bronchus with mechanical obstruction. He did not consider influenza an ætiological factor.

Dr. J. C. TULL (Singapore) and Dr. J. ANDERSON (Hong-Kong) both gave as their experience that primary carcinoma of the lung was rare in their respective districts; they said, however, that primary carcinoma of the liver was commonly associated with biliary cirrhosis, possibly due to the fact that 85 per cent. of patients had had syphilis.

Dr. W. C. MACCARTY (Mayo Clinic) considered the increasing incidence of cancer of the lung as a great problem in the near future.

Dr. A. T. TODD (Bristol) suggested arsenic as an ætiological factor in view of its general use in treatment.

The CHAIRMAN said that it was helpful to get the experience of medical men from all parts of the world, and that it was interesting to know that new growths of the lung were carcinomatous and not sarcomatous in origin.

Dr. HUTCHISON, replying, said that general opinion agreed that there was a definite increase in the incidence of primary cancer of the lung. Little light had been thrown on ætiology; he viewed with diffidence Prof. Shennan's suggestion that preceding lung disease was a factor, since the growth itself set up chronic inflammatory changes. He thought there was no evidence that "gassing" or arsenic favoured malignant growth, and diet was known to have no influence.

BIOLOGICAL EFFECTS OF RADIUM AND X RAYS.

Prof. SIDNEY RUSS took the chair at this discussion, when special reference was made to the factors of wave-length, intensity of radiation, and duration of exposure.

Prof. C. REGAUD (Radium Institute, Paris), who opened, said that experiments on the normal tissues of higher animals showed a varying reaction in different tissues if changes were made in intensity of irradiation and duration of treatment. With regard to human skin, Friedreich and Krönig showed in 1918 that, given the same quantity of radiation, earlier and more marked effects were produced when the dose was given in a shorter time. When a dose was spread over a long time the effect was progressively less. In the latter case, therefore, the total dose should be augmented. But it was a mistake to suppose that the experimental results obtained with human skin could be applied to other tissues. In 1927 Ferroux and Regaud, working with X rays, showed that sterilisation could not be produced in the male rabbit without causing necrosis of the skin. When a massive dose was used, however, it was filtered. On the other hand, sterilisation could be easily and constantly produced without causing any serious and lasting lesion of the integuments if the dose was extended over five days. Behaviour of different tissues varied under different periods of exposure. The explanation, he thought, must be sought in the alternation of the radio-sensitivity of the cellular stocks, which were dependent on the renewal processes of the normal and neoplastic tissues.

Prof. H. HOLTHUSEN (Hamburg) said the quality of rays must be chosen according to the depth of the focus to be treated. In the case of superficial diseases soft rays were preferred, while for deep therapy strongly filtered rays of high intensity were preferable. No quantitative rules had been made. One rule which had been impressed upon him was that the skin-tolerance dose should not be exceeded in applying a certain focal dose. It seemed clear that there was no difference between the strength and the biological effect of hard and soft rays within the limits of technically employed rays, including the supra-soft rays. Pathological conditions responded better if the dose of radiation decided upon were spread over a number of days or weeks.

Dr. D. QUICK (New York) read a paper in which his purpose was to correlate some of the experimental findings with clinical observations. In experimental work variations were bound to occur, and no single angle of approach would afford an adequate survey of such a complex subject. There was a wide variety of opinion as to the wave-length which should be employed. In discussing the possible reason of reactions occurring, he said too much was usually based upon physical measurements. Did it follow that the rays which were calculated as being given were all absorbed? He was sure that the proportion of energy absorbed differed with each organ. He did not depreciate the value of biological research, but submitted that there existed an equal need for careful clinical observations, based on trial on the human subject.

Dr. G. BUCKY (New York) pointed out the peculiar position occupied by the skin in the matter of response to radiation; it differed from all other organs. He gave results on the skin of the use of 100, 60, and 30 kv.

Dr. R. G. CANTI (London) spoke of the relationship of radiation effects to the factors of intensity and time, and said there was a threshold of intensity of radiation below which no biological effect took place. Similarly, there was a threshold of minimum time, which had to be exceeded for results to occur.

Dr. N. S. FINZI (London) confined his attention to the question of the latent period, which he regarded as of probable importance in discovering the mode of action of radiation. The definition of latent period was "the space of time after the application of radiations before some of their effects become obvious." The larger the dose the shorter was the latent period. The latent period varied greatly according to the tissue receiving the dose. The salivary glands had a latent period of only a few hours, as shown by the stoppage of salivary secretion. The latent period for dry skin was 17 days—i.e., the time at which erythema began to appear; also, with the same dose, it was the time at which hair fell out.

A regrowth of hair took place in three months. Another generalisation he gave was that the longer the wave-length of X rays the shorter was the latent period, and vice versa. But there was a large range of medium wave-length for which the latent period was the same. An important adjuvant was moisture. If the skin was kept moist the latent period was half what it was in the dry state. Heat shortened the latent period, especially moist heat, as also did the presence of metallic salts on the skin.

Dr. L. MALLET (Paris) said that gamma rays were specially efficient for epithelioma of the mouth and cancer of tongue, palate, tonsil, and pharynx. In all forms of cervical cancer only X rays gave a good result.

Prof. F. C. WOOD (Columbia) emphasised the variability in resistance to radiation of all kinds of biological material, and described the method of inquiry being pursued at his centre. Their conclusion was that so long as the rays reached the depth required the actual wave-length was not important.

Other speakers were Dr. S. N. WATERMAN (Amsterdam), Dr. A. PINEY (London), Prof. W. DUANE (Harvard), Dr. W. C. STEVENSON (Dublin), and Colonel S. MORT (London).

The CHAIRMAN, in summing up the discussion, said there was much difference among radiologists as to whether the biological effects of X rays depended on the wave-length. It was a case of attempting to make generalisations when there was no basis for them. The question did not arise in the laboratory, but was primarily due to clinicians. Some workers had gone as far from the clinical as possible, using ova of various organisms and calculating as far as they could the energy absorbed by these ova. Efforts were now being made to settle the question without biasing the mind by the use of ova.

OCCUPATIONAL CANCER.

The Section of Pathology, Statistics, and Public Health met under the Presidency of Prof. W. S. LAZARUS-BARLOW.

Drs. J. C. BRIDGE and S. A. HENRY, of the Home Office, presented a statistical review of industrial cancer in this country. They recommended, as the only effective prophylactic measure, the substitution of innocuous bodies for those with known carcinogenic properties. If this were impossible, early detection and treatment were the only measures. Inquiries had not elicited a single case of cancer in the X ray industry. They suggested that research into occupational cancer of the skin, especially among women, would yield valuable results.

Dr. T. H. C. STEVENSON (London) spoke of the importance of social distribution; nonconformist and Anglican clergymen occupied the first and second places in a list of 178 occupational groups arranged in reverse order of cancer mortality, while Roman Catholic priests came sixteenth. The certified mortality of the clergy from syphilis was also remarkably low. Comparison between cancer and alcoholism as measured by cirrhosis of the liver, showed similar but less striking results, and Dr. Stevenson concluded that both syphilis and alcohol had a carcinogenic influence.

Prof. G. SCHMORL and Dr. O. ROSTOSKI (Dresden) described the endemic lung cancer of the miners of Schneeberg; they regarded the anthra-cochalicosis scars from which the men suffer as pre-cancerous and left undetermined the primary causal factor. The radio-active dust in the Schneeberg rock might play a part. In six cases multiple primary tumours had been found, and in four there was a latent period, after ceasing work, of 10–18 years.

Dr. ALEXANDER SCOTT (Broxburn) described the more prevalent lesions caused by semi-refined and crude mineral oils and paraffin—viz., papular dermatitis, erythrodermia, and epithelioma. The cancer incidence in the works of Scottish Oils, Ltd., among 5000 men, was less than 0·1 per cent. per annum. The chief predisposing factors were age, length of service, and idiosyncrasy. Early detection, by periodic examinations, was the most valuable prophylactic measure. Multiple primary growths were common.

Mr. A. H. SOUTHAM (Manchester) gave an account of mule-spinners' cancer, in the ætiology of which idiosyncrasy and dry skin played an important part. The condition could easily be detected at an early stage and excision was satisfactory except in the case of the scrotum, where glandular involvement was more frequent. Multiple primary growths were occasionally encountered.

Dr. L. CAROZZI (Geneva) discussed occupational cancer, pointing out the inadequacy of present methods of detection. He pleaded for an international medical inquiry on uniform lines, and for a set of guiding principles for revelation and detection of the injurious element in each "carcinogenic" industry.

Dr. A. F. SLADDEN (Swansea) described the epithelioma of South Wales patent-fuel workers, ascribed to gas-works pitch. Usually the growths were superficial and of low malignancy. Systematic medical inspection and prompt removal of warts were important prophylactic measures. The scrotum was the most dangerous area.

Prof. W. J. O'DONOVAN (London) presented a clinical review of occupational skin cancer due to tar, arsenic, oil, and X rays. He pointed out the frequency of a latent period and of multiple primary growths. The prognosis for early cases of tar cancer was very good, and treatment by flat plates of radium was satisfactory. The possibility of actinogenic carcinoma required investigation. He pleaded for a centralised record of amputated carcinomatous hands.

Dr. W. M. DEVRIES (Amsterdam) said that occupational cancer was rare in the Netherlands; cases had occurred in briquette factories, where pitch-dust was in the air.

Dr. F. L. HOFFMAN (U.S.A.) discussed the statistics of cancer incidence and mortality among industrial workers. Estimation was difficult in America because the men very frequently changed from one establishment or from one occupation to another. Dr. Hoffman had been unable to find any record of a case of cancer among lead workers.

Dr. E. L. KENNAWAY (London) discussed statistical data of 921 fatal cases of cancer of the penis and scrotum: the ratio of scrotal cancers to cancers of the penis was lowest among agricultural workers, lower in clerical than in manual workers, and lower in those doing light than heavy work. He suggested that cancer of the scrotum affected especially those who washed least and were exposed to the dust of towns.

THURSDAY, JULY 19TH.

RELATIVE VALUES OF SURGERY AND RADIATION.

Mr. J. P. LOCKHART-MUMMERY took the chair at the resumption of the discussion, commenced on Tuesday morning, on the relative values of surgery and radiation in the treatment of cancer of the cervix uteri, rectum, breast, and buccal cavity. Prof. BURTON LEE (New York), opening, spoke on conservatism in the treatment of

Primary Operable Cancer of the Breast.

He held that conservative surgery deserved as much credit in his results as radiation therapy, and preferred the combined use of the two methods to radical surgery with radiation. Radium was more effective in mammary cancer than X rays; it was especially suitable for patients who also had an intercurrent chronic disease and for those who rejected radical surgery.

Mr. W. SAMPSON HANDLEY asked: 'Can either radiation or operation alone cure breast cancer?" He showed slides proving that surface radiation could destroy or arrest the growing edge of a group of permeated lymphatics, but concluded that, owing to the great extent and depth of the surface to be treated, it was unsafe to trust to radiation alone. Although the primary growth and the enlargement of the glands

might disappear dissemination continued. Operation alone might at first sight appear to be sufficient, but an analysis of his recurrences showed that breast cancer, when it came to operation, was usually already a thoracic disease, and therefore that no operation was complete unless a systematic attempt were made to deal with the intrathoracic extension of the disease by buried radium. For the present surgery and radiology must be colleagues, not competitors. Buried tubes generally relieved, and might cure, recurrent breast cancer when the surgeon was helpless. For supraclavicular recurrence a combination of excision with buried tubes gave the best results, but it was useless to try to excise fixed supraclavicular glands.

Dr. ROBERT KNOX (London) compared Dr. Janet Lane-Claypon's figures of the results of surgery in 2000 cases with those of a small series of patients treated with X rays. Surgery gave appreciably better results in early cases, but in second-class cases the rays seemed to hold the advantage with 53·6 per cent. of cures against 42·1 per cent., and in the worst cases there was no comparison. Buried radium had not yet proved its value.

Mr. GEOFFREY KEYNES and Dr. J. H. D. WEBSTER (London) summarised papers which appeared in THE LANCET of July 21st and 14th respectively.

Cancer of the Mouth.

Dr. DOUGLAS QUICK (New York), in his opening paper, said in no other group of cases was radiosensitivity so important as in this; the more adult the type of a growth the more resistant it was. Treatment by external radiation would produce complete regression in the more embryonal types of growth, but for squamous-celled carcinoma the application of radon in gold capillary seeds was also necessary. This method, in his clinic, was applied, in the maximum intensity consistent with tissue tolerance, to the local lesion and to both sides of the neck. Mouth hygiene was important, but bad teeth should not be extracted until after irradiation had produced its maximum effect. Prolonged moderate doses were preferable to short intense ones. Surface applicators within the mouth were not recommended. Surgery was not used in direct treatment, but was often a necessary auxiliary to give access to the tumour, to remove bone in cases of secondary invasion, and to remove bulky masses after irradiation.

The treatment of metastases of the neck glands was more important than that of the primary growth. External radiation was sometimes assisted by buried seeds; the 4-g. radium pack was better than X rays, but good X rays were better than inadequate radium. Once the disease involved both sides of the neck it was regarded as incurable.

Mr. STANFORD CADE (London) concluded, from a study of 50 cases, that the treatment of election in mouth cancer consisted of three stages: radium therapy of the primary growth, surgical removal of the cervical glands, and post-operative distance-irradiation of the cervical area. Radium gave the only hope in metastatic involvement of the neck.

Prof. G. E. PFAHLER (Philadelphia) described the use of pure γ radiation, which was painless on application, produced no mutilation or constitutional symptoms, preserved the function of the tongue, and usually caused the disappearance of metastatic lymph nodes.

Dr. B. E. ROSE preferred the diathermy knife for inoperable growths, with irradiation after about a month. Inoperable growths should be treated by radium unless the alveolus were extensively involved, when they should be left alone. The gland fields should be excised if possible and the wound irradiated, but the results of irradiation on inoperable glands were bad.

Evaluation of Statistics.

Dr. JANET E. LANE-CLAYPON (London) laid down in her opening paper the fundamental necessities of any statistical inquiry. Only by rigorous statistical methods, she held, was it possible to estimate the advisability of modifications in practice or the value of other agencies.

Prof. F. C. WOOD (Columbia) and Prof. JÜNGLING (Stuttgart) pointed out the urgent necessity of minute histological subdivision of the various classes of patients in assessing the value of various therapeutic methods. The former postulated that deaths of untreated or rejected patients should be taken into account, and the latter pleaded for an international standard, without which it was impossible accurately to correlate one set of figures with another.

CHEMOTHERAPY, WITH SPECIAL REFERENCE TO LEAD.

Sir THOMAS HORDER, who presided at a discussion on the lead treatment of cancer and other methods of chemotherapy, appealed to the speakers to deal with the issue on a clean slate, dismissing from their minds any attempt at prejudgment on ill-digested material.

Prof. BLAIR BELL (Liverpool) read the paper which appears on p. 164 of our present issue.

Prof. F. C. WOOD (Columbia) thought no one would deny that lead would have an effect on malignant disease in the human subject, but he considered that a greater effect followed X rays. There were cases that yielded entirely to lead. Both lead and gold colloid had been used by him in experiments on rats. His conclusion was that the optimum period for those metals was after the first dose of X rays. The fact that tumours did not alter in size did not mean that they had not been seriously damaged by the treatment and their growth checked.

Dr. BURTON SIMPSON (Buffalo) spoke of 19 cases of malignant disease which had been treated with colloidal lead, prepared according to the Blair Bell method, all in an advanced stage of the disease, and had already had surgery or radiation or both. Careful urine and blood analyses were made each day. No clinical improvement was observed in any of the cases, but very soon after the administration there was a severe toxic action on the blood, with secondary anæmia. Nausea and vomiting were frequent, and some of the patients had pronounced jaundice. Only one of the 19 cases was now alive. The treatment had now, owing to the suffering of patients, been abandoned at the institute. Dr. Simpson said this unfavourable impression was supported by all whom he had heard from on the subject.

Prof. WALTER DILLING (Liverpool) thought that no final estimate of the therapeutic value of lead was likely to be reached for a considerable time. Lead seemed to exert a special action on growing tissues of embryonal type and sublethal concentrations of lead ion retarded growth, particularly in young animals. His experience was that while lead therapy produced marked benefit in some cases of malignant disease, it left others quite uninfluenced for good. It could not be regarded as parallel to the effect of arsenic in syphilis. Even slight modifications in the routine of preparation rendered the colloid less safe. He showed the results obtained by Prof. Heilbron, of Liverpool, in testing the toxicities of various organic lead complexes. Safe injections were colloidal lead phosphate, with three equivalents of sodium acetate and colloidal lead selenide. He related the results of searches for lead in normal tissues and found that spleen, liver, lung, and kidney contained the greatest proportion.

Mr. BASIL HUME reported the results of an investigation by a committee of St. Bartholomew's Medical College, every care having been taken to follow closely the Liverpool method, Prof. Bell having expressed his full approval of the method after a visit. He gave the details on which the following conclusion was based. In 13 cases treated by lead alone 11 died, after an average life from commencing the treatment of 13 weeks. The two survivors (carcinoma of breast) had not improved. Seven patients had deep X ray therapy after preliminary injections of lead colloid. In one case the lead was injected into and around the growth, as the patient was not suitable for the usual

method. Of the other six, one received a full first and second course, two a first and a partial second course, and in the other three the whole or part of the first course only. In none of them was improvement demonstrable while under lead treatment. In a majority of the cases the growths increased very rapidly under the treatment, but none of the patients seemed to have died as the result of acute or chronic lead poisoning.

Dr. STANLEY WYARD (Cancer Hospital, London) referred to his work on eosin and selenium, and said that success in treating cancer in animals by these had been claimed. No metal had been found by Caspari to be more potent than others. Prof. Bell had claimed better results from lead treatment than had any other worker. At the Cancer Hospital 56 cases had been treated with lead colloid, and the average duration of life after treatment was commenced was five months, but after receiving 0·3 g. of lead the average life was 7 months 3 weeks. Of 40 patients who received sufficient lead 23 died, 10 were worse, 6 showed no change, 1 was somewhat improved.

Dr. G. LOEWY (Paris) referred to the finding of Waterman that lead had a curative action on transplanted rat cancer. In every human case, however, lead caused grave intoxication. He had been using colloidal oxide of lead in glycogen in an isotonic solution of 5 per cent. on dogs, which showed very fair toleration to it in a dose of 4 mg. per kilo of body-weight. The toxic dose was 5 mg. Clinical tests showed a remarkable human tolerance to the colloidal lead with glycogen, and the best dose was probably 50 mg. Women were more susceptible to it than men; it was stable and could be preserved for several months. No cure had, however, been obtained with it, but its innocuousness led him to resolve to continue its use.

Dr. A. P. THOMSON (Birmingham) said that in 55 cases treated by lead the treatment seemed to influence the progress of the disease favourably in 15, though in most only temporarily. By the system of trial and error he thought it was possible to know within a short time of commencing the treatment whether it was likely to be successful. In the cases which improved the hæmoglobin had never fallen very low. Patients were not now given as large a dose as Blair Bell originally suggested.

Dr. H. F. B. FRY (London) spoke of the pathological changes seen by him in the fatal cases treated with lead by Dr. Wyard, especially in the kidneys and liver, which were most probably due to the lead.

Prof. BELL, in reply, remarked that little had been said on chemotherapeutical principles; the discussion had turned largely on clinical details. In Liverpool scientific curiosity was not allowed to outrun humanity, and for that reason attention had not been confined to lead alone; a goodly proportion of the 1000 cancer cases treated there had had deep X ray therapy in addition to lead. Every patient must be individually treated or satisfactory results could not be expected. Why was it that patients coming to him from London had been imbued with a fear of terrible reactions occurring? These allegations had been made in *Nature*, and that journal had refused to insert his rejoinder. He had brought the treatment to the state that made reactions practically negligible. The size of the growth after treatment was no criterion of its malignancy, for it might be cystic or necrotic. Nature did not proceed by leaps; one must not look for the miraculous. In answer to Mr. Hume, it was true he did what he could to help the work at St. Bartholomew's; his complaint there was that in 15 cases only half the treatment had been given, and conclusions based on these were not fair.

Dr. T. LUMSDEN (Lister Institute) gave an exposition on tumour immunity and the position of the attempts to kill cancer cells without damaging normal tissue. He suggested that those who treated tumours with radium should not try to get rid of the local growth too hurriedly, so as to cause sloughing, otherwise immunity was hindered.

Prof. F. BANG (Copenhagen) read a paper setting out the results of minimal optimal doses of metallic salts in increasing the defensive mechanism of the body.

Dr. M. COPEMAN (London) pointed out the good effect of surface applications of fluoresceïn prior to a mild dose of X rays in carcinomata. He showed a number of slides setting out the favourable results, and advocated an extensive trial of the method.

The CHAIRMAN, in summing up, dealt with three questions which had been raised in the discussion: (1) Have any patients got well after treatment by lead and (not to quibble) as a result of it? The answer, he thought, was in the affirmative. (2) Can we undertake the responsibility of advising patients to undergo lead treatment? I feel, he said, we have not yet arrived at the point of safety which will enable us to do this. (3) What are the next steps to take? Further search should be undertaken for lead preparations less toxic than those now in use, with the hope of widening the margin of safety at present dangerously small.

FRIDAY, JULY 20TH.

EARLY RECOGNITION AND TREATMENT OF CANCER OF THE STOMACH

Sir BERKELEY MOYNIHAN opened by remarking that the symptoms described in the text-books were those of well-established disease, with organic changes so firmly rooted that there was little chance of complete removal of the growth. The early symptoms varied enormously in different cases. In some the onset of the disease was rapid and even in a very few weeks the tumour was found to be beyond the reach of the surgeon. In some cases the symptoms closely resembled those of duodenal ulcer, while in others they were simply those of dyspepsia, and might be temporarily improved by medicinal treatment. In other cases, again, the symptoms were those of obstruction, at either end or in the body of the stomach. Hæmorrhage might be an early and severe symptom, and sometimes a diagnosis of pernicious anæmia was made, while cases had been diagnosed as suffering from malignant disease of the stomach when the disease had really been pernicious anæmia. Thus it could be seen that the clinical picture was so various and so multiform that by observation of symptoms alone a correct diagnosis might not be possible. Different opinions were held as to the relation of cancer of the stomach to simple ulcer; but there could be no doubt that cancer might develop on a gastric ulcer, for when operating for gastric ulcer the surgeon might find that at one part of the simple ulcer there was a carcinoma; if the case had been seen later the malignant growth would have spread throughout the whole of the simple ulcer. It was important to recognise that cancer of the stomach, like cancer elsewhere, was certainly a local disease, and while it was small it was curable by operation. If the disease was allowed to reach a stage of extensive development the chance of complete removal was greatly diminished. In any cases occurring in a patient over 35 an early radiological examination was imperative, for in this way only was early diagnosis possible. The early infiltration of the muscle caused a loss of movement at the affected part. In any case of doubt an exploration of the stomach was essential.

Dr. A. F. HURST (London) said that there could be no doubt that a chronic ulcer of the stomach could become malignant. He laid stress on the importance of looking for occult blood in the stools, and he agreed that X rays generally gave such a clear picture that the diagnosis was certain. The achlorhydria of cancer of the stomach was probably due to a chronic gastritis which preceded the appearance of the malignant growth. Hitherto the early diagnosis and treatment of chronic gastric ulcer had alone been considered in discussing the prophylaxis of cancer of the stomach, but it now appeared probable that chronic gastritis was a much more common precursor. It could be prevented by dental hygiene, the treatment of oral and nasopharyngeal sepsis and common

sense dietetic rules. When present it could be cured by removal of the cause, together with lavage every morning with dilute hydrogen peroxide until no more mucus is removed.

Dr. EDMUND SPRIGGS (Ruthin Castle) pointed out that, though the newest methods, such as X rays and chemical tests, enabled us to recognise the presence and nature of the lesion at an early stage, the first suspicion must arise from the study of the earliest symptoms. It was not sufficient to say that a patient had indigestion and to treat this merely by medicine or diet; indigestion was not a diagnosis; it may be due to any one of many causes, but it must be remembered that the earliest manifestations of cancer of the stomach in no way differed from those of indigestion from other causes, except that the symptoms did not disappear rapidly with simple treatment. Dr. Spriggs detailed the main symptoms of carcinoma in the order of their appearance: discomfort in the abdomen apart from food, loss of appetite, pain after food, heartburn, flatulence, vomiting, regurgitation of mucus, weakness, loss of weight, dysphagia, and tumour. In a few cases hæmatemesis was the first indication of the disease. A palpable tumour was always a late sign; as a rule it meant that the growth was inoperable, but not always. In any case in which the possibility of malignant disease of the stomach was suspected all the methods of diagnosis should be employed; the fæces should be examined for occult blood, the gastric juice should be tested, and X rays should be used. The earliest objective sign of cancer was probably local arrest of the peristaltic wave of the stomach as shown by X rays.

Prof. H. FINSTERER (Vienna) said that as a cancer of the stomach can be cured only by an operation, an operation should always be attempted as long as there are no signs of metastases, such as ascites and jaundice. The extent of the cancer largely influenced the operative results. If the disease was limited to the stomach and only the stomach had to be resected, the immediate results were relatively good, for the operative mortality in his cases was only 5 per cent. Part of this good result was due to the use of local anæsthesia in elderly patients. If owing to involvement parts of the pancreas, liver, or colon had to be resected the operation mortality was far higher, over 37 per cent.; yet even in these patients resection was justifiable, for some had survived for 5 to 13 years. To get good permanent results the operation must be very radical, the whole lymphatic area must be removed, even if the glands were not apparently diseased. The whole of the greater and lesser omentum also must be removed. In 18·5 per cent. of his cases the cancer had developed in a simple ulcer.

Prof. RAFFAELE BASTIANELLI (Rome) reviewed his personal experience of 543 cases. The mortality of 239 resections was 28 per cent.; of 176 gastro-enterostomies, 21·5 per cent.; and of 118 explorations, 15 per cent. The mortality figures of any surgeon depended largely on the sort of case he would undertake to operate upon. Prof. Bastianelli's guiding principle was to remove the stomach as often as the anatomical conditions would allow and as extensively as possible. A great part of the operative mortality was due to thoracic complications. For several years he had employed local anæsthesia in gastric operations, giving a general anæsthetic in addition only where necessary. He favoured a Polya Reichel technique. A study of the recurrences was of importance in determining the extent of an operative technique, and a general routine ought to be adopted in all advanced cases. He did not think that the ovaries are affected from stomach cancer by cells dropping on to their surface, but that the invasion occurs from the hilus by lymphatic spread. Surgical technique had now reached a very high level, but it could not be expected that more than 7 per cent. of patients with stomach cancer seeking advice would be likely to be cured. It was therefore essential to study precancerous lesions, to use preventive surgery, and to recognise the earliest symptoms of cancer.

Prof. M. J. STEWART (Leeds) pointed out that it is generally possible to decide whether a cancer is arising from an ulcer. In an ulcer of the stomach there is a definite destruction of the muscular coat with a turning up of the ends of the bundles of fibres. In 239 cases of cancer of the stomach there were 15 per cent. in which the growth had certainly started from a simple ulcer. He showed some striking slides in which cancer of the stomach was associated with a large number of gastric polypi.

Mr. A. J. WALTON (London) stated that there is no evidence that gastric cancer is increasing; in fact, in his own practice, it is becoming a less frequent disease, and this fact he was inclined to attribute to the fact that many patients have been saved from carcinoma by having their simple gastric ulcers treated surgically. As to the results of operation, between 1913 and 1924 he had performed 62 partial gastrectomies; of these 3 could not be traced. Subsequently, 55 had died of recurrence and 4 were still alive. Of these 4 one had lived 15 years, one 12 years, one 10 years, and one 7 years. To better the results it was, in the first place, essential that a correct diagnosis be made earlier; in the second place, since a certain number of cases arise in simple ulcers, these should be treated surgically if they did not respond readily to medical treatment.

Prof. D. P. D. WILKIE (Edinburgh) mentioned that in over 44 per cent. of all cases of cancer the stomach is affected. It was an insidious disease and early diagnosis was essential if any real benefit was to be derived from operation. Among 675 cases admitted into the Royal Infirmary, Edinburgh, only in 60 cases was a radical operation possible. Examination by X rays after a barium meal was by far the most valuable form of evidence, though it was not absolutely infallible, for in some malignant cases a diagnosis of a simple ulcer has been made. Since there was a chance of error in all available diagnostic methods the question of an exploratory incision should always arise where doubt existed. It was advisable that everyone should be submitted to periodical medical examination; for then in many cases malignant disease would be recognised at a stage when operation would be most valuable. Treatment by radiation offered less hope in this than in almost any other form of cancer.

Dr. MACCARTY quoted the statistics from the Mayo Clinic. Of 1680 cases of operation on the stomach 869 were for chronic ulcer and the remainder were for cancer. The operation mortality of the cancer cases was 9·5 per cent.

Mr. HERBERT W. CARSON (London) said that the cause of the low percentage of cancers of the stomach suitable for operation was that patients came to the surgeon at too late a stage. Middle-aged or old men should not be treated for indigestion until cancer had been ruled out. The earliest sign was generally loss of appetite, followed by loss of energy and wasting. If at an operation the complete removal of the disease was impossible, benefit and increase of comfort would often follow a jejunostomy.

Sir BERKELEY MOYNIHAN, in reply, urged that diagnostic methods should be cheapened, and this he regarded as the duty of the Government. It would pay insurance companies to charge reduced premiums to a person who could at intervals of six months produce a certificate that he had undergone a thorough examination by a competent doctor. Cancer of the stomach, as cancer elsewhere, is a local disease, which should be recognised and removed at the earliest possible moment.

DIAGNOSTIC METHODS IN RELATION TO CANCER.

Sir WILLIAM HALE-WHITE being in the chair, Sir THOMAS HORDER opened the discussion on this subject. Since, he said, we believe the disease to be a local condition in the first stages, early diagnosis was imperative; a difficulty of paramount importance was introduced, however, by its local character, since it deprived us of serological and analogous methods dependent on generalised effects. Diagnosis, he

went on, presented three stages: First, a local change with no general disturbance, the curable stage; secondly, dysfunction of the part with anatomical change; thirdly, the stage of cachexia. In early diagnosis he placed great value on the significance of symptoms—he could hardly emphasise sufficiently the importance of dyspeptic symptoms in a patient previously perfectly well; he thought the school which taught that cancer intervened on chronic dyspepsia and other conditions were entirely wrong; in the majority of patients the disease arose in healthy organs. He pleaded for simplicity of technique in laparotomies; patients might then be more willing to submit to them. All additional aids should be employed when suspicious symptoms arise—radiology, biopsy, serology, hæmatology, and biochemistry.

Dr. T. IZOD BENNETT (London) said that treatment was a pious hope for the future, early diagnosis was the problem for to-day. Prognosis in cancer of the stomach was at present far worse than cancer in any other situation since early symptoms were so insidious and access to the organ was difficult. There were, he said, three diagnostic procedures of great value. X ray photography was the method of first choice, a loss of mobility appeared before a filling defect, also the presence of an ulcer in a patient whose history was of brief duration should raise suspicion of malignancy. He gave no support to the theory that malignancy supervened on chronic ulceration. Gastric analysis, he said, when carefully performed, yielded reliable diagnosis in about 90 per cent. of cases; signs were often most conspicuous in the fasting content. Lactic acid, when present, was said to establish the diagnosis beyond question. Finally, gastroscopy, he thought, was a method for the future, although at present disappointing. Serological tests would be unlikely, he thought, to diagnose cancer at a curable stage.

Dr. MACCARTY (Mayo Clinic) said the dominant theme in America was "Bring your sores and lumps to the physician early." In his opinion no cancer was early if larger than ½ cm. in diameter. X ray examination by an expert would tell if there was a lesion in the stomach, and ulcers should be excised because diagnosis of malignancy could not be made. The speaker showed a chart illustrating stages in development of cancer from gastric ulcers, and said that 39 of 869 cases showed malignant change. Malignancy could be expected when the average diameter was 2·17 cm.

Prof. L. S. DUDGEON described his technique (published in the *British Journal of Surgery*, 1927) for making rapid wet-film examinations of neoplasms. He said that autolysed tissues and fixed tissues were unsuitable for investigation. Considerable skill was necessary, but he could now diagnose correctly in 98 per cent. of cases.

Prof. LEWIS (Liverpool) said that normal blood serum acting on pancreatic lipase augmented its lipolytic power. In certain conditions, including cancer, the lipolytic augmentation was reduced. He showed tables to prove that in cases treated with lead clinical deterioration went hand in hand with a decreasing lipolytic augmentation, whilst improvement accompanied a rise.

Prof. BLAIR BELL said that while the lipase coenzyme activity of the serum was not a specific diagnostic method, it was of great value in assessing the progress or retrogression of malignant disease.

Prof. ASCOLI (Catania) said he saw the immediate future of sero-diagnosis of cancer in the methodical research in non-specific reactions.

Dr. H. J. B. FRY (London) described a flocculation reaction in routine use at the Cancer Hospital for the sero-diagnosis of malignant disease. In 1550 malignant and control cases correct results were obtained in 73·3 per cent. The reaction appeared to depend on products of cellular or tissue disintegration.

Dr. J. BRAXTON HICKS (London) described work he and Dr. Hocking had undertaken to evolve a complement-fixation test for cancer. They were, he said, prepared from the beginning for negative results, since the fixed tissues of a part seemed so indifferent to the intrusion of cancer cells; their work was further complicated by deterioration of the antigens. The results proved inconclusive.

Dr. S. MELVILLE (London) talked on diagnosis of intrathoracic neoplasm by X rays. The radiologist sees not the growth but the result of stenosis of the bronchus; when less commonly, the growth invaded the lung, the diagnosis was much more difficult. Two great aids in diagnosis, he said, were production of artificial pneumothorax and injection of lipiodol. In illustration he showed skiagrams on the epidiascope.

Prof. E. C. DODDS (London) said that he and his assistants had worked for three years testing methods for diagnosing malignant disease from a study of the composition and behaviour of the blood. In particular he had investigated the Abderhalden, the Shaw-Mackenzie, and the Ringold methods; all these investigations proved the methods quite unsuitable for the diagnosis of malignant disease.

Dr. K. ITCHIKAWA (Japan) showed a chart illustrating the modifying effects of varying amounts of albumin and globulin in Botelho's serum reaction for early diagnosis of cancer; in certain cases it appeared possible for it to give a positive reaction where no cancer was present.

The CHAIRMAN, in closing the discussion, said that in advocating laparotomy, obvious risks must not be forgotten such as mortality from anæsthetics, adhesions, and the bad effects on neurasthenic patients. The physician should therefore have strong grounds on which to base a recommendation for operation. The results of sero-diagnosis were, he thought, disheartening; the most reliable test seemed to be the biopsy test. He referred to the great discordance of opinion as to the frequency of cancer of the stomach in regard to gastric ulcer, and suggested that it was probably more common in America than in other countries; in his experience it was a very rare occurrence. He said that in his opinion the test-meal was of great value in diagnosis, particularly ferment activity and the absence of active hydrochloric acid. He considered that the only hope of cure lay in early diagnosis.

On the same day the Section of Radiology, under the chairmanship of Dr. ROBERT KNOX, discussed the

EFFECTS OF RADIUM AND X RAYS ON CIRCULATORY SYSTEMS, WITH SPECIAL REFERENCE TO MALIGNANT GROWTHS.

Prof. F. C. WOOD (Columbia) said that the effect of radiations, electric currents, and even excessive heat and cold upon the blood-vessels was to cause a thickening of their walls. The vascular changes following exposure to radium and X rays were especially clear-cut, and probably played a part in the therapy of tumours and in the chronicity of ulcers following over-dosage. Twenty-four hours after heavy exposure the intimal endothelium of small arteries and the muscular coat were swollen, and as the process became chronic the œdema disappeared, the endothelium proliferated, and the vessel might be closed. Veins showed only a slight thickening of walls. The importance of this change lay in the reduction of the blood-supply to the part, consequent on the arterial thickening, and this was a factor in the arrest of a tumour. Lymph vessels, at an early stage of irradiation, showed no alteration. Later some dilatation might be observed, but the vessels did not become closed. No therapeutic doses of irradiation were capable of closing lymphatics.

Dr. A. LACASSAGNE (Paris) asked what part was played in the regression of cancerous tissues by circulatory changes following irradiation, and said he thought it was largely a question of starvation due to restricted blood-supply. As to the lymphatic vessels, knowledge as to what occurred in these following the use of rays lacked precision, though it was clear that in cancer-sterilising doses irradiation might disturb the lymphatic circulation, at least in certain regions of the skin. To kill the cancer cells—a necessary condition for the cure of a malignant neoplasm—it was necessary that the radiant energy should impinge directly on to them. Sclerosis of the dermis, and

consequent obliteration of the lymphatic circulation might sometimes retard and localise the growth of certain cutaneous cancers.

Prof. H. HOLFELDER (Frankfort-on-Maine) said it was recognised that in dealing with cancers by radiotherapy the object was to cause the degree of reaction which normal tissues could just tolerate without sustaining permanent damage. An excessive dose of X rays led to a more or less complete obstruction of lymphatic and smaller blood-vessels, especially the capillaries, thus obstructing nutrition to healthy tissue. This must always be avoided. For even a lethal dose of radiation to be effective on cancer, the help of the connective tissue was needed, and this complex intracellular metabolism was conditioned mostly by the blood and lymph flow. There was always an interval after irradiating a growth before any sign of reduction was observable.

Mr. CLIFFORD MORSON, speaking as a surgeon who practised radiology, said that a large dose of radium caused extravasation of blood, whereas a smaller dose produced obliteration of the blood-vessels, without rupturing their walls. Malignant growth of a blood-vessel (endothelioma) could be destroyed by irradiation. In the treatment of malignant disease by irradiation it was important to remember that the greater the vascularity of the organ in which the tumour was growing, the better the results from such treatment; good examples were growths of tongue and uterus. The cutting off of the blood-supply had three advantages: immediate cessation of the hæmorrhage, deprivation of nourishment to the tumour, and the retention of any substance which exerted secondary radiation.

Dr. DOUGLAS WEBSTER spoke of metabolic changes in the blood. He said it was agreed that huge doses of irradiation were needed to damage the cancer cells directly, and it was necessary to take into consideration also the connective tissue stroma of the growth, and the blood and lymphatic distribution.

Prof. H. HOLTHUSEN (Hamburg) pointed out that as irradiation could alter the sensitiveness of the skin the erythema following deep irradiation was not always a safe indicator as to the dosage being applied.

Dr. F. T. BURKITT referred to the direct action on blood produced by pure gamma rays.

Dr. W. LEVITT spoke of a series of cured cancer cases which he had treated by intensive X ray radiation, in all of which there was, during treatment, a rapid decrease in the lymphocyte count.

The CHAIRMAN thought that until quite recently the indirect effect of irradiation on tumours had not received adequate attention, but he had now been able to organise research on this aspect, in the hope that guidance for treatment would emerge. Already practical results had been achieved. His own view was that a drop in the lymphocyte count was an indication to go slowly with the irradiation. He was not sure that the profession even yet realised the damage which might be caused by injudicious exposures.

GEOGRAPHICAL AND RACIAL PREVALENCE OF CANCER.

At the Section of Statistics and Public Health the chairman, Lieut.-Colonel F. E. FREMANTLE, M.P., in his opening remarks, emphasised the value of the study of public statistics. They were often extremely suggestive. At the same time it was most important to guard against a wrong use of statistics, for they easily lent themselves to false representation.

Prof. MAJOR GREENWOOD (London) sought to define the problems at issue and give some account of the data needed for their solution. In comparing the mortality of cancer in different races great differences were found, but it had to be decided: first, whether these differences were merely the outcome of better or worse systems of recording; and, secondly, if not, whether they were due to habits of life, climate, and other environmental factors, rather than to differences in racial character. These questions had never been satisfactorily answered.

The majority of those who had studied official vital statistics were satisfied that the mass comparison of national rates of mortality from cancer was at present of little value. However, the comparison made by the Health Organisation of the League of Nations between cancer of the breast and uterus in the female populations of England and Wales, Italy, and the Netherlands showed clearly that death from cancer of these sites was far more common in England, whereas gastro-intestinal cancer was more prevalent in the other countries. No explanation had been found for this. The total mortality from cancer in these countries was about the same.

The fact that this national contrast was specific and not general suggested that its origin was likely to be environmental. For instance, they would expect that kangri cancer would occur with similar frequency in all races who adopted the particular practice which was the exciting cause, although this expectation might be falsified by racial variations in responsiveness. When it was a question of pathological change in sexual organs they might speculate as to whether the explanation might not be in some difference in the sexual practices of the peoples in question, a subject of which little was known. The conclusion drawn was that they had not sufficient data nor sufficiently powerful methods of statistical analysis to solve these problems. With the object of adding to these data he desired to refer briefly to the regional distribution of cancer in England and Wales.

Cancer was regionally less variable than the non-tuberculous respiratory diseases; in fact, its local variability was not great. Unfortunately the existing English data were quite inadequate for the racial characterisation of different parts of the country. If the sharpest contrast from the racial point of view was made which the data permitted—viz., between the Welsh cities and those of the east of England—it was found that for cancer as a whole the two groups gave practically identical rates, although for other causes of death there was a large difference.

The scanty collection of data available served to confirm the impression that the geographical and racial factors of variability were of less importance in cancer than in other great causes of mortality. A point of interest which emerged from the League of Nations' study was that whereas mortality from sites other than uterus or breast was correlated with mortality from non-cancerous conditions, no reliable correlation could be discovered between mortality from cancer of these sites and mortality from non-cancerous conditions. This complicated the problem and was an additional argument for his contention that we needed more facts before we could frame hypotheses.

In the absence of Prof. A. NICEFORO (Naples) and Prof. E. PITTARD their communications were summarised by Prof. GREENWOOD.

Prof. NICEFORO divided Europeans into the following races or anthropological types: *Homo nordicus, H. alpinus, H. mediterraneus, H. orientalis, H. dinaricus.* Italy was peopled by representatives of the types alpinus and dinaricus in the north, alpinus or mediterraneus in the centre, and mediterraneus in the south and islands. He found statistical correlation between the presence of the Mediterranean type of short stature, dark, dolichomorphic cranium, and the lower rate of cancer incidence, while the presence of the brachymorphic alpinus and dinaricus was associated with a higher cancer-rate. But he doubted whether it was race or race alone which influenced the cancer mortality, for in some provinces of northern Italy inhabited by populations of the Mediterranean type the cancer incidence was as high as that of other northern provinces. The author then considered racial types and cancer incidence in other European countries. He could draw no conclusions from the facts available, and was of opinion that the problem was so complicated that even where excellent material was available the statistical method by itself could not suffice. He proposed a new way of studying the question by direct examination of some thousands of

cancer patients. It could then be seen whether certain morphological characters were more frequent in cancer patients or not. It would be easier to carry out than the other and might lead to more certain conclusions.

Prof. EUGENE PITTARD (Geneva) discussed the question of race. In Europe the Nordic race appeared to be most affected by cancer, the Mediterranean race least. He compared the rates of mortality from cancer in Sardinia, Sicily, and Malta. They were respectively 32·4, 41·1, and 48·2. Sicily showed a higher rate than Sardinia because its racial condition was less homogeneous. The rate in Malta was explained by the presence of a colony of Nordic Britons. London had a much higher cancer mortality than New York. New York had a heterogeneous population; London was mainly Nordic.

Dr. M. SOURASKY (London) read a paper on the Incidence of Cancer among Jews and the Problem of a Specific Racial Factor in Cancer. In studying cancer among Jews account must be taken not only of the comparative incidence of cancer mortality, but also that of various organs separately. There was no truth whatever in the suggestion that Jews were immune from cancer, nor were they specially prone to it. The speaker showed figures from six European capitals in support of his statement. Speaking generally the variation was geographical, not racial.

But when the incidence of cancer of the various organs was examined it was seen that cancer of the uterus, penis, and buccal cavity was less among Jews, whilst that of the gastro-intestinal tract showed a greater frequency. Cancer of the tongue was about half as frequent in Jews as in the non-Jewish population. This could be accounted for by the lower incidence of syphilis, and therefore of chronic superficial glossitis amongst them. Their immunity to penile cancer was explained by circumcision. A similar immunity was found among the Mohammedan Indians, who practised circumcision, while the Hindoos of the same race who did not were prone to be attacked. The figures for carcinoma of the breast varied, being sometimes lower, sometimes a little higher than those for the rest of the population. In London the mortality from breast cancer among the poorer Jews was decidedly lower (60·9 per cent.) and that of the richer somewhat higher (103·7 per cent.), compared to England and Wales generally (100 per cent.). The explanation here was simply a matter of social status; among the richer Jews were more unmarried women, later marriages, and a lower birth-rate, all of which factors favoured breast cancer.

The remarkably low incidence of uterine cancer (one-third to one-half the number occurring in the rest of the population) appeared to be due to the observance of the Mosaic ritual laws by the mass of Jewish women. Their main provisions were the prohibition of coitus at certain times and the imposition of frequent ritual baths. The practice of this code produced a high degree of sexual cleanliness and restricted cohabitation at times when rest was probably beneficial. Some continental authorities held that while carcinoma of the cervix was a disease of married life pregnancy was not an essential factor. This view was not widely accepted, but it was clear that married life was the usual precursor of cancer of the cervix. A well-regulated sex life might therefore be a favourable factor in the avoidance of disease. In any case, obedience to the Mosaic code resulted in a highly satisfactory sexual hygiene.

With regard to the high mortality among Jews from gastro-intestinal cancer no ætiological factor could at present be brought forward. Racial predisposition had no evidence in its favour. It could only be suggested that the well-known tendency of Jews towards metabolic disturbances should be remembered in this connexion.

Dr. PERCY STOCKS (London) read a paper on the evidence for a regional distribution of cancer prevalence in England and Wales. He concluded that after correction for sex, age selection, urbanisation, and migrational selection the mean cancer indices of the county areas grouped themselves into definite regions of high and low prevalence, showing that geographical influences were in some way concerned. The large towns showed wide differences which could not be explained by their age or social distributions, and their rates tended to be generally consistent with those in the surrounding country.

Dr. MATTHEW YOUNG (London) was unable to be present. His studies of cancer mortality and the distribution of racial types in Scotland suggested that if any real association existed it was in inverse ratio to that shown in other parts of Europe, for the greater the proportion of the Nordic type in the population the less the cancer mortality.

Dr. R. M. F. PICKEN (Cardiff), in discussing Dr. Stocks's paper, pointed out the danger of drawing conclusions when all the factors were not understood. South Wales was racially no more Welsh than the English counties around North Wales. Probably Liverpool and Lancashire had more Welsh stock than the Welsh counties.

Commander GIBBON showed statistics of the incidence of cancer in the Navy and in the native labour force at Singapore. The figures of incidence of gastro-intestinal cancer paralleled closely those of the incidence of disturbances of the digestive system in general.

The second discussion on the same morning centred round

PUBLIC ACTION IN REGARD TO CANCER.

The opening address by Sir GEORGE BUCHANAN (Ministry of Health) will be found elsewhere in this issue.

Prof. J. MAISIN (Louvain) considered that the most effective way of prosecuting the campaign of cancer in any country was to provide a number of anticancer stations. The stations should be of two kinds: primary fully equipped stations and secondary stations. Each station should be under the charge of a director, who should be a laboratory man with good clinical knowledge or a physician, because the choice of a surgeon or radiologist might tend to a one-sided view of the scope of research or a consequent suppression of initiative in some directions. The station must be equipped like a large modern hospital and must have first-class specialists in all branches of medicine. Supervision of patients who have undergone treatment must also be provided for and a complete system of records kept up. Research centres were a necessary part of each station. Centres of instruction for young practitioners were absolutely indispensable and courses of instruction in the early diagnosis of cancer should be made compulsory. Lectures, popular instructions, and the distribution of pamphlets should not be neglected, but they were of secondary value and should be used with prudence so as not to provoke carcinophobia. The duty and interest of the public was to assist by every means at their disposal in the realisation of such an undertaking.

Dr. G. A. SOPER (New York) described the work of the American Society for the Control of Cancer. This Society had sought to instruct the public concerning cancer by means of pamphlets, posters, lectures, moving pictures, radio, magazine, and newspaper articles, and finally by "cancer weeks." The latter especially appeared to arouse great enthusiasm and led to thousands of people coming up to be examined in the temporary clinics held, many cases of cancer being thereby discovered.

Dr. STANLEY P. REIMANN (Philadelphia) had made a careful statistical study of the influence of the educational campaign on the interval between discovery and consultation in mammary carcinoma. During the years from 1900 to 1927 inclusive there had been a steady decrease in the time interval between the discovery of carcinoma by the patient and consultation with the physician or surgeon. There had been no inflection in the curve to indicate that the educational campaign begun in 1914 had had any effect. The improvement during the first 14 years when there was no educational propaganda was just

as great as during the last 14 years. The speaker liked to think the steady progress was due to better training of physicians.

Sir JOHN ROBERTSON (Birmingham) discussed the cancer problem from the point of view of a medical officer of health. In Birmingham cancer mortality was on the increase, especially among males. Fifty years ago the incidence was one male for every two females; now it was one male for every one female. The type of district made no difference. In those who had died of carcinoma of the breast the average time between the patient noticing a lump and applying to a doctor was 10·2 months. He did not advocate compulsory notification because of the difficulty of offering suitable treatment to all cases. The public should be educated as was done for tuberculosis.

Dr. VEITCH CLARK (Manchester) advocated the public control of cancer as the immediate practical way of dealing with the disease. He was not in favour of cancer clinics. Quack treatment of cancer should be made illegal. It was necessary to clear the public mind of misconceptions concerning cancer. He described the work now being done in Manchester.

Mr. ARTHUR COOKE (Cambridge) proposed the establishment of clinics where routine breast examinations of the whole female population could be made once a year. In a population of 100,000 there should be something under 100 cases for discovery annually.

Prof. FICHERA (Milan) described the Vittorio Emanuele III. Cancer Institute of Milan, opened on May 1st of this year.

Dr. L. M. MCKILLOP (Queensland) gave statistics on the incidence of cancer in Australia and described the Queensland Cancer Campaign.

Dr. MORTLOCH BROWN called attention to the needs of rural districts. She criticised the use of the term "pre-cancerous."

The CHAIRMAN said there was one thing he wished to impress upon his audience—the duty of refuting statements made on untenable statistics. In the last few months a campaign had been going on amongst the medical profession that certain forms of food produced cancer. An eminent surgeon was even devoting his life to persuading the public that cancer was due to eating meat. There was nothing whatever in statistics to support this. The statement that cancer of the intestine was unknown in India had been entirely refuted. He commented on Dr. Sourasky's remarkable paper and thought that the Mosaic law could give them points in prevention of cancer. Dr. Reimann's paper showed the failure of flamboyant propaganda and the value of steady educational progress. He himself advocated medical inspection every five years after the age of 40. There was no definite message from this Conference. They could not show much to be done on communal lines at present, but they were going forward. They must look to the laboratory workers, especially to pathology, for help. Meanwhile attention to general hygiene had effect in curtailing the ravages of cancer.

THE CANCER HOSPITAL DINNER.

At the invitation of the medical and surgical staff of the Cancer Hospital, about 120 guests sat down to dinner at the Langham Hotel on Thursday, July 19th, when Mr. W. Ernest Miles, senior surgeon to the hospital, presided over a distinguished and representative international gathering. After the loyal toast Sir Berkeley Moynihan proposed "The Cancer Hospital," describing surgery and research as the two arms of medicine at the present day, full use being made of both at the ideal hospital, of which the Cancer Hospital was a notable example. Mr. Miles, in replying, referred to the inspiration which the late Sir Charles Ryall had been to all his colleagues on the staff. Mr. Miles then proposed "The Overseas Visitors," whose achievements he described as beacon lights along the dark road of cancer research. Surgery, he said, it was now admitted, no longer stood alone in the treatment of cancer; radiology stood alongside it, and the wise surgeon would be an expert radiologist, or the wise radiologist an expert surgeon, if indeed, as would be better, the two did not coöperate. The veteran Prof. J. Rotgans, of Amsterdam, and Dr. J. B. Murphy, of the Rockefeller Institute, New York, replied for the visitors, the latter giving the results of his search into the early documents of the Cancer Hospital, which was, as he had discovered, "founded for the relief of a disease for which science has as yet afforded so little help." He remarked on the courage of calling it frankly a "cancer" hospital (which would be impossible in the United States), thus helping to remove that terrific dread and horror which was so potent a force in aiding the spread of cancer in a community. Sir Charles Gordon-Watson proposed "The Chairman" in a neat little speech. Amongst those present were Prof. R. Bastianelli, Prof. J. Ewing, Prof. C. Regaud, Prof. H. Finsterer, Sir John Bland-Sutton, Sir F. Gowland Hopkins, Sir Thomas Horder, and Sir Richard Garton.

UNITED STATES OF AMERICA.

(FROM AN OCCASIONAL CORRESPONDENT.)

Rabies in Chicago.

Prof. E. O. Jordan, of the University of Chicago, and Dr. E. E. Irons, dean of Rush Medical College, representing the Chicago Institute of Medicine, have issued a public statement of the growing menace of rabies in that city. During the first five months of this year 561 dogs' heads were found rabid out of 704 examined in the laboratory of the health department. In the same period for 1927 only 11 heads were found positive out of 56 sent for examination. In May of this year there were seven times as many positive diagnoses of canine rabies as in the whole of the year 1926. In the last 12 months 1046 persons known to have been bitten by rabid dogs have been given the Pasteur treatment; this figure, however, does not include an unknown number treated by private physicians. There were no human deaths from rabies from 1919 to August, 1927, in the city, but since that time no less than 19 deaths have been reported. Muzzling is called for and the prompt destruction of all stray unmuzzled animals. One may be sure that if Mayor Thompson had not removed from office the competent commissioners of health whom he found in charge of the department, it would not have been necessary for the Institute of Medicine to issue this urgent warning.

Key Catalogue of Insects.

The fourth of a series of key catalogues on medical zoology recently issued by the United States Public Health Service, is entitled Key Catalogue of Insects of Importance in Public Health.[1] It has been prepared by Prof. C. W. Stiles, of the Public Health Service, and Dr. Albert Hassall, of the Bureau of Animal Industry. Accurate classification and cross-indexing make the index exceedingly valuable to all interested in medical entomology. For example, a dermatologist in search of the caterpillars which cause urticaria looks up this word in the introduction under Dermatology, and finds cross-references to 40 different genera of moths and butterflies, the larval stages of which cause urticaria in man.

Risks of Tourist Camps.

A menace to vacationists in this country is the rapidly growing number of tourists' "camps." These camps vary in their conveniences from a strip of untidy earth on which motorists may put up their tents and cook a picnic meal, to small colonies of comfortably furnished wooden or stucco cottages with numerous modern conveniences at hand, including shower-baths and an electric laundry. Some of the State health departments, as, for example, Indiana, have become awake to the need of inspecting such wayside camps, for insanitary privies and

[1] Hygienic Laboratory Bulletin, No. 150. Surgeon-General U.S.P.H.S., Washington, D.C.

contaminated water-supplies are not at all uncommon among them. The Indiana health department provides a certificate of approval, which is to be displayed prominently, and also undertakes to close camps which are not found satisfactory, or which do not become satisfactory after reasonable notice has been given.

MEDICINE AND THE LAW.

Parents' Responsibility for Operations on Children.

IN his last annual report the medical officer of health for Cumberland dwelt upon recent proceedings against parents who declined to submit their children to operations for the removal of adenoids and tonsils. These cases, under Section 12 of the Children Act, alleging neglect of a child by reason of failure to provide adequate medical or surgical aid, naturally excite controversy, and the local newspapers have published letters in which the action of the parents is stoutly defended. The medical officer, it is said, is merely balancing two remote contingencies. A child is unlikely to die under an operation for removing adenoids; on the other hand, it is unlikely to die or to suffer serious damage if no such operation occurs. Many people, it is argued, live fairly happy and comfortable lives, as life goes in this ill-constructed world, with tonsils and adenoids complete. It is a choice between two remote possibilities—death or serious injury under operation on the one hand, and grave injury to comfort, through throat affections, on the other. Positive certainty of considerable pain and the disagreeable consciousness of mutilation attach to one choice alone. Such are the comments which proceedings under Section 12 evoke. They resemble the comments on other occasions—in connexion with vaccination, for example. There is the same association with strong family feeling, love of liberty, distaste for operations, and dislike of official interference. Parents, fond of a child, naturally resent the allegation of criminal neglect which Section 12 imputes.

While it is impossible to ignore these hostile views, it is too late in the day to put them forward in a court of law. The case of Oakey *v.* Jackson, in 1914, left no doubt whatever of the parents' duty. A girl of 13 was suffering from adenoids which were causing mental dullness, impaired breathing, deafness, and some anæmia; the only possible remedy was a surgical operation for removal of the adenoids. Failure to permit that remedy was alleged to be causing "unnecessary suffering or injury to health" within Section 12. The father and mother thought an operation unnecessary; they did not believe in operations, and they refused to allow the child to go to the infirmary where the operation could be performed. On their behalf it was argued that the Act never intended to make surgical operation compulsory; the performance of the operation and the administration of the anæsthetic must involve some measure of risk to life; parents were justified in refusing to take the risk, and such refusal was not a failure to provide adequate medical aid. The justices agreed and declined to convict, but the King's Bench Division remitted the case to them for reconsideration. Darling J. quoted the dictum of Lord Russell of Killowen C.J. in Reg. *v.* Senior: "neglect is the want of reasonable care—that is, the omission of such steps as a reasonable parent would take, such as are usually taken in the ordinary experience of mankind." Applying that opinion to Jackson's case, Darling J., with an unusual disregard for the canons of judicial ignorance, remarked that it was not necessary to know much about surgery to know that the operation for the removal of adenoids was very common in the case of children, and that a failure to perform the operation might result in danger to life if the child should ever happen to be attacked with illness. The parent, he continued, was under a legal liability to allow the operation if the refusal to do so was in the circumstances a failure to provide adequate medical aid. It was a question of fact in each case, and the justices might very properly have convicted Jackson. The justices, it appears, cannot evade the responsibility of dealing with the facts. In a case reported in the *Times* of May 21st, 1912, the justices convicted a father, under Section 12, of neglect to provide medical aid in the form of an operation for cleft palate. The High Court then refused to make absolute a rule *nisi* for *certiorari*, the question being simply one of fact for the justices. The latter have to consider the nature of the operation and the reasonableness of the refusal. It is all very well to argue that there is merely a choice between two remote contingencies, and that the parents, rather than the medical officer, should have the right to choose. The material for the decision must mainly be a matter of medical evidence. One thing to be taken into consideration by the justices, said Avory J. in Oakey *v.* Jackson, is whether the person who advises the operation is a qualified medical practitioner or merely some irresponsible person.

So stands the law, and arguments and comments must not ignore the law. In the last resort, of course, a parent might say, "I do not recognise the law and, sooner than allow an operation upon my child, I will go to prison." Conscientious objection may be a rule of conduct; it is not a legal defence. Before the Children Act was passed in 1908, there was an earlier statute containing something akin to Section 12. Under this earlier Act Robert Downes was prosecuted in 1875. His child had been wasting for some nine months from chronic inflammation of the lungs, and then died. The father belonged to a sect which never called in medical advice but called in the elders of their church to pray over sick persons. The Court held that, whatever doubts might exist as to a duty at common law to provide adequate medical aid, the statute left no doubt whatever. The statute, said Baron Bramwell, imposed an absolute duty upon parents, whatever their conscientious scruples might be; "the prisoner wilfully (not maliciously, but intentionally) disobeyed the law and the death ensued in consequence." Those who disagree to-day with the positive duty imposed upon parents by Section 12 of the Children Act are perfectly entitled to demand that the law be changed. It is doubtful if such an agitation will commend itself to an electorate to which a large feminine contingent has lately been added. Meanwhile, medical officers of health are equally entitled to draw attention to the existing law, and, in this respect as in others, to seek to educate the public in all health matters.

DONATIONS AND BEQUESTS.—Mr. Walter Kerr Fernie, of Thornton Hough, Cheshire, and of Liverpool, besides other bequests, left £1000 to the executors for such charitable institutions or objects and in such proportions as they may think fit, and £500 each to the Liverpool Royal Infirmary; the David Lewis Northern Hospital, Liverpool; the Royal Southern Hospital, Liverpool; the Stanley Hospital, Liverpool; the Royal Liverpool Hospital for Children; and the Neston Cottage Hospital.—Miss Mary Turnbull, of Nottingham, left £1000 to Nottingham General Hospital for the purposes of the superannuation fund connected therewith.—Mrs. Elizabeth Jane Reddaway, of Southport, among other bequests, left £500 each to St. Mary's Hospital for Women and Children, Manchester, to Henshaws Institute for the Blind, to the Northern Counties Hospital for Incurables, to the Hospital for Consumption and Diseases of the Chest, Manchester, to the Children's Hospital, Manchester, to the Christie Hospital, Chorlton-on-Medlock, to the Babies' Hospital, Slade-lane, Manchester, to the Manchester and Salford-street Children's Mission, and to St. Dunstan's Hostel.—Mr. Edward Masfen Arrowsmith, of Sydenham-park, left £500 to the Home and Infirmary for Sick Children, Lower Sydenham, S.E., and £500 to the Metropolitan Convalescent Institution (Seaside Branch).—Mr. Arthur Tyler, Oadby, Leicester, left £500 to the Leicester Royal Infirmary, £250 to the Leicester Guild of the Crippled Holiday Home, and £200 to the Leicester and Rutland Institution for the Blind.—Mrs. Elizabeth Wilson, North Shields, bequeathed £16,500 to the Tynemouth Jubilee Infirmary for additional buildings.

BRITISH MEDICAL ASSOCIATION.

ANNUAL MEETING AT CARDIFF.

REPRESENTATIVE MEETING: JULY 20TH-23RD.

THE annual Representative Meeting of the British Medical Association opened at the City Hall, Cardiff, on Friday, July 20th, with Dr. C. O. HAWTHORNE in the chair. The representatives were officially welcomed by the Lord Mayor.

Mr. A. H. Burgess, professor of clinical surgery in the Victoria University of Manchester, was elected President of the Association for 1929–30, and Dr. W. Harvey Smith, of Winnipeg, for 1930–31. Mr. R. G. Hogarth and Sir Robert Bolam were appointed Vice-Presidents, in recognition of their services as President and Chairman of Council respectively.

International Obligations.

Much discussion arose on a proposal that the B.M.A. should become a full member of the Association Professionelle Internationale des Médecins (A.P.I.M.), whose object it is to be an international union and bureau for the interchange of information and ideas on the social and political aspects of medical practice. The proposal had been rejected by the Council on the ground that membership would bring to the B.M.A. no advantages which would justify the annual subscription (£125) and the demands which would be made on the time of the medical secretary and his staff. The Council expressed its willingness at all times to furnish medical associations, national or international, with any information at its disposal, and several representatives said they thought this was sufficient evidence of the desire to help the profession in other countries. They pointed out that lack of funds already hampered expansion of the B.M.A.'s own work at home and that the expense of belonging to the A.P.I.M. might eventually reach £1000 a year, representing a very large capital sum. Medico-political problems, unlike those of science, were purely national, and must be settled nationally. The A.P.I.M. was young and had no prestige; to join at this stage would be a step in the dark. In answer to these objections it was argued that the purpose of joining might be to give rather than to receive. The new association could not thrive unless it was supported, and the B.M.A. had experience which would be really useful abroad. Membership of the A.P.I.M. involved no obligation to abide by decisions taken on the continent, nor did it commit the B.M.A. to expenditure beyond the subscription. The great need of the world was for international coöperation, and in point of fact there was much to be learnt from the ways in which other countries dealt with such problems as health insurance and the certification of the insane.

These last arguments carried the day, and the meeting instructed the Council to take the steps necessary to secure full membership of the A.P.I.M.

Radiotherapy by the Unqualified.

Mr. H. S. SOUTTAR, Chairman of the Science Committee, proposed:—

That the Representative Body express the following opinion, namely, that in view of the risks to the public involved in the use of electricity and radiation as methods of treatment by untrained and unqualified persons it is to be desired (1) that suitable courses of training should be organised under medical direction for persons who wish to administer this form of treatment; (2) that persons who have satisfactorily followed such a course should be entitled to have their names entered on an approved roll; (3) that one of the conditions attached to admission to, and maintenance on, the approved roll should be abstention from the treatment of any patient except upon the responsibility and under the general supervision of a registered medical practitioner; and (4) that patients who require electrical or radiation treatment should be referred only to those persons whose names are on the approved roll.

He put forward the motion because it was undesirable that the public should be misled by the absurdly optimistic claims made by institutions providing treatment by ultra-violet rays and electricity. On the other hand, medical men wanted to be able to send their patients to places where suitable treatment of this kind could be skilfully given.

Dr. J. F. WALKER thought it unwise that the Association should set the seal of approval on any kind of unqualified practice. Could the line be drawn at chiropodists or herbalists?—Dr. H. B. BRACKENBURY, Chairman of Council, answered that there could be no objection to the establishment of a register containing the names of persons competent to do certain things, so long as they were prepared to do these things only under the supervision and direction of registered practitioners. The Association would never have opposed the registration of opticians had they not asserted the right to act as independent practitioners. The profession had to recognise at this time of day that there were craftsmen capable of doing things that medical men were not prepared to do for themselves.

The motion was carried by a large majority.

Proprietary Medicines and Secret Remedies.

The meeting approved a motion by Lancashire and Cheshire that the Council should "consider the advisability of resuming the investigation into the composition of secret remedies and the publication of the results." It was pointed out that a very large number of patients were misled by specious advertisements in the daily press, and that there was a constant stream of inquiries from doctors concerning the value of the preparations recommended. The Chairman of Council said that the matter had lately been considered, and it was thought that the cost might be prohibitive. The old publications could hardly be re-issued in their present form, but if they were revised it must be done ab initio.

The meeting was more impressed, however, by Dr. J. D'EWART's reminder that the expense of publication, and even of actions at law, might easily be justified by what the Association would gain in the public esteem by work so obviously useful.

The New National Health Insurance Act.

Dr. H. G. DAIN, Chairman of the Insurance Acts Committee, said that the Minister of Health had informed the profession that there was little in the Insurance Bill that concerned their interests, but the few words affecting them had proved to be very important. The Act of 1924 had said that additional benefits should be administered by approved societies unless they were "in the nature of medical benefits." This clause was omitted from the new Act, and at the same time new additional benefits had been introduced. He proposed the following resolution:—

That it is essential if the medical profession is to take part in the provision of additional (medical) treatment benefits under the National Health Insurance Acts that these, as in the case of statutory medical benefit, shall be administered in such fashion that the services of the medical profession, who elect to give advice and treatment in connexion therewith, shall not be under the control of any approved society or societies.

This was passed nem. con., and it was agreed that the principle ought to receive statutory recognition and definition.

Dr. BRACKENBURY said that the new Act gave the approved societies dangerously wider powers, but these could only be exercised with the Ministry of Health's approval. The profession preferred protection by legislation to protection by consultation. The new Act recognised two forms of additional benefit which had been separated by an unfortunate accident. The first was payment to a practitioner for treatment or advice outside the scope of any other additional benefit or of medical benefit, under a special scheme approved by the Minister for the purpose. The second was payment to approved charitable institutions (e.g., clinics) for similar forms of treatment. By law an approved society could adopt the second of these without adopting the first and thus the position of

specialists or consultants would obviously be prejudiced. The Minister had promised to do the utmost in his power to dissuade an approved society from taking such action, but if societies proved refractory a situation might arise in which the Association would have to advise consultants and specialists to take no part in a particular schemes.

Dr. E. R. FOTHERGILL (Brighton) expressed grave fears that specialists and consultants would lose practice because the approved societies would tend to make arrangements with hospitals and institutions, and after discussion the meeting unanimously accepted his resolution instructing the Council to press on the Ministry "the necessity for the adoption or approval of such regulations and schemes only as are in conformity with the appropriate fundamental principles," and to take such steps as may become necessary to unite the profession against accepting service under any other conditions.

Periodical Examination of Insured Persons.

Dr. ELIZABETH CASSON, for Windsor, drew attention to the value of regular medical examinations. The present race of adolescents, who had been inspected throughout their school lives, were, she said, far healthier than their predecessors, or than their contemporaries from places where such examination was not done. A discussion followed in which one speaker pointed out that regular examination—even without fee—would profit panel practitioners by keeping their patients away.

Mr. E. B. TURNER wished that approved societies could be induced to look at things in terms of health and efficiency instead of £. *s. d.*, and the tendency of some representatives to discuss the financial aspect was discouraged by others who wished the meeting to express a general opinion for the information of the public. The following motion was carried by a large majority :—

That in the opinion of the Representative Body the establishment of periodical medical and dental examination of all persons insured under the National Health Insurance Acts is urgently called for as an economic proposition, having regard to the return so to be obtained in health and productive efficiency : that every such insured person, when accepted as a patient on a doctor's panel, should be by that doctor medically examined and the result of that examination placed on record ; that preliminary examination should apply also to dental examination, when that additional benefit is included and available under the National Health Insurance Acts.

Assistant Medical Officers in Mental Hospitals.

Dr. J. W. BONE, chairman of the Medico-Political Committee, brought forward recommendations on the payment of assistant medical officers in mental hospitals, as set out in the Council's report. These, he said, represented an attempt to bring the 1915 scale up to date, and were submitted for general approval. The report received a good deal of criticism, especially from Dr. PETER MACDONALD, who said that the proposals had not been discussed with the Royal Medico-Psychological Association, and might have an unfortunate effect on the present relations between the governing bodies of mental hospitals and their medical staffs. They would be taken as interference by an outside organisation and if they were applied might have the effect of levelling down salaries rather than levelling them up.

These views gained some support, but the Council succeeded in getting the general approval it asked for the proposals, on the understanding that the recommendations did not become part of the policy of the Association until there had been further negotiations with the bodies concerned.

Paying Centres for Infant Hygiene.

Dr. BONE reported that a deputation had waited upon the Council from the Association of Infant Welfare and Maternity Centres, and the Babies Club at Chelsea. The deputation said that there was a strong feeling that the mothers of the middle-class public should be able to get that guidance and instruction which is provided by the municipal and child welfare clinics for poorer mothers. Many private practitioners, it was considered, were unable or unwilling to give the kind of instruction required, and there were advantages in having the instruction given at a centre by a doctor who had given special attention to this branch of medical work, assisted by a fully trained nurse. The Council believed, said Dr. Bone, that the ideal was that mothers should be able to look with confidence to their own family doctor for the guidance required, but he thought it was no use to say that there ought to be no such centres as the one proposed. They already existed, and they would be set up in increasing numbers. The Council had been asked to say what were the right lines for their conduct and therefore put forward a resolution saying that the education of mothers was desirable, that there were already means by which it could be partially attained, that the further establishment of paying centres should be for the purpose of education and health propaganda and not for treatment, and that mothers preferring to avail themselves of the centres should do so with the knowledge of the family medical attendant.

The Council made several other recommendations on the subject, but opposition from representatives prevented their being considered.—Dr. FOTHERGILL and Mr. E. B. TURNER attacked the principle of countenancing clinics for people who could afford to have a doctor of their own.—Dr. J. W. JOHNSON said that young mothers were more and more seeking the aid of practitioners concerning the upbringing of children, and there was no excuse for lending aid to a misguided scheme of this kind.—Dr. E. A. STARLING deplored the extension of the "wave of clinics" from the poorer classes to the richer.—Dr. JOHN STEVENS thought that such a scheme must lead to overlapping and friction between clinics and practitioners, and Dr. A. B. MURRAY said that "if we're not fit to look after the children it's an end to private practice."

The Council's policy was supported by Mr. BISHOP HARMAN, Dr. DAIN, and Dr. BRACKENBURY.—Dr. CHRISTINE MURRELL suggested that not very long ago the proposal to establish infant welfare clinics for the poor had been looked at askance by the Representative Body ; was there not a danger of opposing anything new, because it was new ?

Dr. L. W. BATTEN spoke convincingly on the demerits of work at clinics, of which he claimed experience, and amid enthusiasm the meeting passed the following resolution, which represented the view of the Council in 1917 :—

That while it fully appreciates the value of any educational work proposed to be undertaken at paying centres for middle-class mothers in the way of giving lectures on infant management, it does not approve of these centres providing consultations and advice in respect of mothers and young children belonging to classes of the community who are quite able to consult their own family doctor.

Maternal Mortality and Morbidity.

On a report brought forward by Sir EWEN MACLEAN, as chairman of a special committee, Dr. DAIN said he was specially impressed by the fact that better organisation would bring about a big reduction of puerperal mortality and morbidity. The report showed that three-quarters of the mortality could be done away with by measures of organisation alone, and the success being attained by certain workers in the slums of large cities ought to be available for the ordinary woman. The same view was reflected in speeches by Dr. JAMES YOUNG (Edinburgh) and Dr. R. C. BUIST (Dundee) who proposed that the Council's recommendations should be amended to include a resolution—preceding the others because of its importance—"that such immediate steps be taken as will ensure full and cordial coöperation between doctor and midwife." This was approved by the meeting, in conjunction with the following recommendations contained in the report :—

(2) That steps should be taken to determine by further experimental research : (*a*) The factors which constitute and the conditions which vary resistance to disease, particu-

larly as regards pregnancy and the puerperium. (*b*) The best specific prophylactic measure to employ for the prevention of infection by *Streptococcus pyogenes*. (*c*) The length of time required to acquire such immunity and the degree and duration of such immunity. (*d*) The therapeutic value of specific as opposed to antiseptic measures in the treatment of septicæmia caused by *Streptococcus pyogenes*.

(3) That increased facilities should be provided for training medical students with special reference to antenatal work.

(4) That a condition of the payment of maternity benefit under the National Health Insurance Acts should be that the mother has had at least one antenatal examination by a qualified medical practitioner during her pregnancy.

(5) That members of the medical profesion should be encouraged to keep regular and careful records of their midwifery cases.

(6) That there is need for further provision of beds specially set aside for maternity cases in institutions. That every maternity home should provide for the complete isolation of septic cases.

(7) That the Association should consider the allocation of additional grants to promote research into the problems raised in this report, including especially the questions raised in the first recommendation of this report.

(8) That a Committee with adequate representation of practitioners be set up to formulate measures designed to bring about reduction in puerperal morbidity and mortality rates, to keep in touch with research work, and to assist divisions and branches of the Association in arranging for education and propaganda with regard to the value of antenatal service, the method of dealing with confinements, and the post-partum care of the mother and care of the infant.

Dr. BRACKENBURY, as a Direct Representative on the General Medical Council, said that the Council had been investigating allegations about the inadequate training of medical students in midwifery. The replies received from teaching institutions had almost all been satisfactory, and neither the public nor the profession need be under any anxiety. All medical students were having full opportunity for training in this sphere and were liable to a complete examination. There was no excuse for saying that the registered practitioner passing through the present régime was not fully trained for undertaking antenatal work, and there was no case for taking the matter out of the hands of the private practitioner.

In the consideration of this subject a certain amount of discussion arose between representatives who thought that the ideal midwifery service consisted of midwives assisted by specialists, and those who regarded the general practitioner as the proper person for the conduct of labour.

Payment for Ambulance Lectures.

Dr. PETER MACDONALD explained that at York the profession tried to carry out the B.M.A.'s policy that ambulance work is a matter of business and not of philanthropy. They had found, however, that elsewhere in the country medical men gave their services for nothing or for an honorarium. This was confirmed by other representatives who told of "blacklegging" by doctors. It was impossible, they said, to get the fee of one guinea for each lecture—a legitimate fee in view of the trouble involved in keeping up with the handbooks—so long as medical men were willing to accept presentation walking-sticks or railway vouchers instead of their rights. Dr. MILNER MOORE, who confessed, at the age of 88, that he had never previously addressed the Representative Body, strongly urged that the Association's policy should be maintained and observed, and this proved to be the opinion of the meeting as a whole.

Compulsion in the Treatment of Venereal Disease.

Dr. DAVID LEES, for Edinburgh and Leith, proposed a motion stating that it was essential that further power should be given to practitioners and local authorities "with a view to strengthening the voluntary system by placing a 'compulsitor' on all persons infected with venereal disease in order to secure the submission to treatment and continuance under treatment of such persons until discharged by a registered medical practitioner." In England, he said, 63 per cent. of the known cases of venereal disease failed to complete their treatment; in Wales the percentage was 45 and in Scotland 51. In face of this could anyone say that the present schemes were successful? Few clinicians would say that we were stamping out syphilis; none would say that we were lessening gonorrhœa. The reasons were two—ignorance and carelessness. It was the duty of the profession to dispel ignorance and the duty of the State to discourage carelessness. The plan of a compulsitor as approved by every local authority and medical officer of health in Scotland did not infringe the liberty of any subject who deserved liberty. It only infringed the liberty of the libertine.

Mr. BISHOP HARMAN thought that compulsion would drive the disease underground where it would be even more destructive than at present, but Mr. E. B. TURNER, who said he had spent a large part of his life in the fight against venereal disease, having addressed 987,000 people on the subject, commended the trial of a compulsitor in selected districts, as proposed by Edinburgh, and recommended in the Trevethin Report. Dr. GRAHAM LITTLE, M.P., on the other hand, thought it useless to try compulsion locally. People would change their place of residence, and in any case defaulting was the least important of the problems of syphilis. The wholly untreated patient was the real danger to the community, not the patient whose infectivity had been reduced by beginning a course of treatment. Dr. BRACKENBURY also maintained that venereal disease could not possibly be dealt with by local option; he would rather see compulsion over the whole country than in limited areas, but Dr. LEES explained in his reply that the area covered by the Edinburgh scheme extended almost from the Forth to the Border, which made a change of dwelling, especially in this time of housing shortage, an impossibility for most patients. The percentage of defaulters at his own clinic was only 26—the lowest in Scotland and perhaps the lowest in the country as a whole. The Representative Body, by passing the resolution, would set a very necessary example to Parliament, some of whose medical Members had ideas on venereal disease some 20–30 years out of date.

The motion was lost by a considerable majority.

Miscellaneous Topics.

An unsuccessful proposal by South-West Wales that the Council should try to secure for the profession a supply of petrol (or its homologues) at commercial rates led to the statement that many garages are willing to make this arrangement with practitioners. Sir RICHARD LUCE said that medical M.P.'s had decided that it would be undesirable to ask for privileges for the profession as regards the new petrol tax.

The Representative Body decided—

"That it is undesirable that chiropodists should be recognised in a special register as such register would convey to the public that chiropodists were competent to undertake the diagnosis and treatment of diseases of the feet."

A suggestion was put forward that the annual representative meeting should in future be held in London, to deal with medico-political questions so that the business of the annual meeting held at various centres could be restricted to scientific and social work and enlarged in scope. But the motion inviting the Council to consider this plan was lost by a large majority. The same fate met proposals to reduce the annual subscription to two guineas, and to investigate the possibility of establishing a compulsory scheme of life insurance for all members of the Association.

A further account of the deliberations of the Representative Body will be published in a coming issue of THE LANCET. In the course of the proceedings it was announced that Dr. Hawthorne had been re-elected chairman for the coming year and that Dr. Arnold Lyndon had been elected deputy chairman.

QUEEN ALEXANDRA MEMORIAL.—It is announced by the Queen Alexandra National Memorial Committee that, when the fund was closed at the end of June, the total amount received exceeded £233,000.

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

CITY OF GLASGOW.

THE discrepancy between the local estimate of the population and that of the Registrar-General is now considerable, and some of the statistics for 1927, from both points of view, are here given.

City of Glasgow (population mid-year).	Birth-rate.	Death-rates per 1000 of the population.					Death-rates per 1000 births.		
		All causes.	Tuberculosis.	Cancer.	Respiratory diseases with influenza.	Heart disease.	Infant and neonatal mortality.	Diarrhœa, &c., under 2 years.	Maternal mortality from childbirth.
Local estimate.. (1,130,675)	20·9	13·7	1·14	1·33	2·5	1·6	107/36	14·4	6·6
R.-G.'s estimate. (1,049,000)	22·4	14·6	1·23	1·43	2·7	1·8	107/36	14·4	6·9

Dr. A. S. M. Macgregor's report, a volume of 381 pages, besides an account of the work of his department and the usual statistical tables, contains special sections dealing with overcrowding, the rehousing for tenants under slum-clearance schemes, the incidence of cancer, results of artificial light treatment in tuberculosis and rickets, a study of puerperal fever at Belvedere Hospital, and an inquiry into the incidence of the non-pulmonary forms of tuberculosis.

Pneumonia and Tuberculosis.

The attempt to provide hospital accommodation for pneumonia, measles, and whooping-cough was made difficult by an unusually high incidence of diphtheria, but the difficulty was relieved by the prompt coöperation of the poor-law authority in admitting patients suffering from pneumonia at times of pressure. Since the municipal hospitals opened their wards to pneumonia, there has been an increased demand and the general hospitals have apparently restricted admission of such patients.

The cases of pneumonia notified during the year numbered 6252 and the percentage admitted to municipal hospitals was 58. Pneumonia, says Dr. Macgregor, is very apt to be erroneously notified and has become a somewhat loose and ill-defined term. In the case of secondary pneumonias the primary cause is often omitted from the death certificate, and this makes it difficult to study the causes which lead to so high a prevalence of respiratory disease in young children. A considerable number of children are sent to hospital for pneumonia who are found to be suffering only from slight catarrh and thus occupy hospital beds to the exclusion of more urgent cases. As an example of the severity of acute primary pneumonia, a case mortality-rate of 26·3 per cent. is cited for 5334 children under 5 years of age, admitted to hospital during the last seven years; under 1 year the case mortality-rate reaches 40 per cent. The death-rate from all forms of pneumonia appears to have increased during the last 70 years, and recent studies suggest that overcrowding and poverty have a greater influence on this death-rate than meteorological conditions.

The death-rate from pulmonary tuberculosis has declined steadily from 1·43 in 1913 to 0·86 and 0·84 in 1926 and 1927. At the request of the Scottish Board of Health treatment with Ruppel's serum was investigated, but the serum did not fulfil expectations. There has been a great fall in the mortality from non-pulmonary tuberculosis.

Since the quinquennium 1901–05, the rate from tuberculous meningitis has fallen from 319 per 1,000,000 to 142; that from abdominal tuberculosis from 301 to 60, and that from other forms of non-pulmonary tuberculosis from 258 to 99. Tuberculous disease of bones rarely leads to amyloid disease nowadays. During May the 4567 cases of non-pulmonary tuberculosis on the register were reduced to 2811 by writing off: (1) those not suffering from tuberculosis; (2) those who had had no active disease for two years; and (3) those of whom there had been no information for two or more years. The residue included 299 under 5 years, 1311 from 5 to 15 years, and 43 over the age of 15. Of the total of 2811 43·3 per cent. suffered from tubercle of bones and joints, 25·5 per cent. from the glandular and 18·2 from the abdominal type. A further analysis showed that tubercle of bones and joints constitutes over 40 per cent. of the cases at the three age-periods mentioned, while the percentage of abdominal tubercle was 35·5 per cent. under 5 years, 23·6 from 5 to 15, and 8·1 over 15, and the glandular form constituted 14·4 per cent. of the cases under 5, 25·8 of the cases under 15, and 28·1 of the cases over 15.

The bone and joint cases are those which require prolonged institutional provision. Of 438 bone cases, 241 suffered from spinal disease. Of the 450 joint cases 205 suffered from hip disease and 127 from knee disease. The figures as regards abdominal tuberculosis are given with some reserve owing to doubt as to the diagnosis.

Owing to housing conditions, institutional treatment is often required until the patient is cured. Thus, of the groups of 2811 patients just analysed, 20 per cent. lived in 1-apartment, 62 per cent. in 2-apartment, 13 per cent. in 3-apartment, and 4 per cent. in 4-apartment houses, and upwards. In 1 per cent. there was no information.

The conclusions of Dr. T. McGowan, from the treatment of tuberculous children with ultra-violet rays at Ruchill Hospital are that the rays have a stimulating effect on all children, but that the reaction in tuberculous cases is greater, and takes the form of an auto-inoculation. Immediately after treatment there is a slight fall in weight and a marked and sustained increase in pulse-rate. The auto-inoculation is proportional to the dosage, and so long as it is not excessive produces beneficial results.

Other Infections.

Influenza was less fatal than in 1926; the mortality from scarlet fever was less; and diphtheria, in spite of increased prevalence, caused a lower death-rate.

A milk-borne outbreak of paratyphoid fever of a mild type gave rise to 67 known cases in August and September, and caused two deaths of young children already debilitated by measles. A follow-up of the 517 survivors from attacks of encephalitis lethargica shows that 245 are fit for work or school, although 104 show minor sequelæ; that 47 are unfit for school; and that 225 are unfit for work, of whom 160 are of the Parkinsonian type, 35 are mental hospital cases, and 30 show other effects. The three years' period for the notification of whooping-cough expired on July 10th, and the notification was not renewed, but visitation by nurses is being continued.

Antenatal Supervision.

During 1927 919 cases were admitted to antenatal wards of the Royal Maternity Hospital as compared with 866 in the previous year. The antenatal dispensary of this hospital was attended by 4267 expectant mothers, and the ten other antenatal centres by 2068. The total births numbered 23,578. Nearly half the expectant mothers attended before the seventh month of pregnancy.

Venereal Diseases.

Among the 47 gonococcal cases of ophthalmia neonatorum there was no damage to eyesight, and among the 358 non-gonococcal cases there was one case of impaired vision of one eye. A plan is given of the new clinic for venereal diseases, opened in October at Black-street, which has relieved the pressure on the Broomielaw dispensary. A table shows that 50 per cent. of the men under treatment for venereal disease and 10 per cent. of the women ceased to attend before completing a course of treatment, and that 3·6 per cent. of the men and 17·5 per cent. of the women failed to submit to the final tests after the completion of the course. Meetings have been held of the local authorities in the West of Scotland and, on March 22nd, 1928, the terms of a Bill for dealing with defaulters was approved at a final conference.

Housing.

The new houses completed during 1927 numbered 5183, compared with 6796 for the previous year, both figures being a considerable advance on former years. For many years it has been impossible to put in operation the statutory powers for the prevention of overcrowding in the 18,000 "ticketed" houses. The most that can be done is to prevent gross overcrowding of one house by two families. The overcrowding in the "ticketed" houses is round about 15 per cent., and when this figure falls it will be an indication that the housing shortage is being overtaken. The crux of the housing problem is the provision of houses at a rental which the working classes can afford. A provisional order is to be obtained for the better supervision of the rehoused tenants. Reports of various rehousing schemes show that about 10 per cent. of the tenants are dirty in spite of repeated warnings. It has been found, by experience, that a considerable improvement can be effected through systematic and sympathetic supervision by nurse-inspectors, and it is proposed to extend this scheme of visitation. During the last five years four slum-clearance schemes have been initiated, involving 5110 houses. Of the latter, 2068 have been demolished, 287 are closed, and 2755 are still occupied. An attempt is being made by power obtained under a local act to control and limit the excessive rentals charged for furnished houses let in tenements.

Bacteriological and Analytical Work.

From the report of the city bacteriologist, Dr. R. M. Buchanan, we learn that 42 cheap shaving-brushes were examined for anthrax with negative results, but that some of the goat-skin thongs used as binding for orange-boxes have given positive results. Of 202 milk samples examined for tubercle two were positive. Dr. Buchanan is of opinion that the tubercle bacillus cannot be satisfactorily identified by the microscopical test, but that animal inoculation is necessary for its detection. During the year 27 milks showed acid-fast bacilli, some of which were indistinguishable microscopically from the tubercle bacillus, and all of which were proved by inoculation to be non-pathogenic. Of 205 samples of designated milk, 189 reached the standard and 16 failed. In certain pasteurised milks, non-sporing cocco-bacilli, or streptococci, have been found, the growth of which appears to have been favoured by the high temperature of pasteurisation. A considerable amount of work has been done with regard to fungoid diseases of fruit, illustrations of which are given in the report. A small outbreak of irritant poisoning, apparently due to eating tinned apricots, appears to indicate that contamination with tin varies according to the quality of the tinplate and the time which has elapsed since canning. The Scottish Board of Health, however, has not felt justified in issuing regulations requiring the date of canning of foodstuffs to be recorded on the container.

The regulations with regard to preservatives in food are said to be working fairly satisfactorily, but butchers in the habit of using a chemical substance known locally as "Madame Rachel" to maintain the bloom of mince have proved somewhat recalcitrant.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED JULY 14TH, 1928.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 177 (last week, 182); scarlet fever, 1695; diphtheria, 919; enteric fever, 38; pneumonia, 747; puerperal fever, 33; puerperal pyrexia, 109; cerebro-spinal fever, 7; acute poliomyelitis, 12; acute polio-encephalitis, 1; encephalitis lethargica, 15; dysentery, 7; ophthalmia neonatorum, 106. No case of cholera, plague, or typhus fever was notified during the week.

The cases of small-pox were notified from the following 21 counties:—London, 3; Bedford, 2; Buckingham, 1; Derby, 16; Devon, 1; Dorset, 1; Durham, 39; Lancaster, 6; Leicester, 4; Northampton, 3; Northumberland, 10; Nottingham, 6; Soke of Peterborough, 2; Stafford, 11; Surrey, 1; Warwick, 1; Yorks, East Riding, 20 (Kingston-upon-Hull); North Riding, 3; West Riding, 30; Glamorgan 9; Monmouth, 8.

The number of patients in the Infectious Hospitals of the Metropolitan Asylums Board on July 17th–18th was as follows:—Small-pox, 27 under treatment; scarlet fever, 1759; diphtheria, 1856; enteric fever, 17; measles, 418; whooping-cough, 172; puerperal fever, 22 (plus 18 babies); encephalitis lethargica, 60; poliomyelitis, 1; "other diseases," 27. At St. Margaret's Hospital there were 23 babies (plus 16 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 2 (0) from enteric fever, 27 (3) from measles, 6 (0) from scarlet fever, 29 (7) from whooping-cough, 25 (4) from diphtheria, 40 (10) from diarrhœa and enteritis under two years, and 24 (5) from influenza. The figures in parentheses are those for London itself.

The two fatal cases of enteric fever were reported from Bath and Worcester. Of the 24 fatal cases of measles outside London 9 were reported from Liverpool and 3 from Burnley. Of the 22 fatal cases of whooping-cough outside London 4 each were reported from Birmingham and Liverpool, 3 from Manchester. In the same week Glasgow reported 10. Fewer deaths from diarrhœa are reported this week than in the two last.

The number of stillbirths registered during the week was 297 in the great towns (corresponding to a rate of 42 per 1000 births), including 52 in London.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

IT is officially announced that the title of the Director-General of the Medical Department of the Navy has been altered to "Medical Director-General of the Navy."

To be Surg. Lts.: F. Dolan and F. G. V. Scovell.

The following are notified: Surg. Lt. A. R. Ewart to *Columbine*. Surg. Lt. (short service) J. J. Keevil transferred to permanent list. Surg. Lts. (D) T. Hunt to *Vivid* for R.N. Barracks, Devonport; and S. E. Brown to *Defiance*.

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. R. B. Ainsworth is apptd. a Professor at the R.A. Med. Coll., vice Lt.-Col. (Bt. Col.) P. H. Henderson, vacated.

To be Bt. Lt.-Col.: Maj. E. T. Potts.

To be Bt. Col.: E. A. Walker, I.M.S.

To be Bt. Maj.: Capt. T. M. Layng, 3/9th Jat. R.

Temp. Lt. M. Clayton-Mitchell relinquishes his commn. and resumes the rank of Capt.

ARMY DENTAL CORPS.

Lt. C. E. Day to be Capt.

SUPPLEMENTARY RESERVE OF OFFICERS.

A. N. T. Meneces to be Lt.

TERRITORIAL ARMY.

Maj. G. F. R. Smith to be Lt.-Col. and to commd. the 164th (W. Lan.) Fd. Amb.

Maj. W. L. R. Wood resigns his commn.

Capt. T. D. Overend resigns his commn.

Capt. C. B. Jones to be Maj.

Lts. R. K. Wilson (R.A.M.C. Res. of Off.) and H. A. C. Gregory (late R.A.M.C., Spec. Res.) to be Lts.

J. G. Weston and H. A. Bulman to be Lts.

ROYAL AIR FORCE.

The undermentioned Flying Officers are promoted to the rank of Flight Lt.: J. O. Priestley and J. Twohill.

RESERVE OF AIR FORCE OFFICERS.

Flight Lts. relinquishing their commissions on completion of service: T. A. G. Hudson and C. H. B. Thompson.

INDIAN MEDICAL SERVICE.

Capts. P. A. Dargan, C. Mac D. Nicol, and L. Blake to be Majs.

Lt.-Col. E. W. Browne retires.

Correspondence.

"Audi alteram partem."

CARDIAC CLINICS.

To the Editor of THE LANCET.

SIR,—Considerable difference of opinion has been expressed recently in your columns as to the predisposing factors in rheumatism. Dr. Reginald Miller thinks [1] that "the environmental factors at work (of which damp and cold are the most important) must to some extent centre round the production of disease-infected tonsils." Dr. W. C. Vining writes: [2] "In Leeds I found nothing to support the belief that damp plays an important part in arousing the rheumatic infection to activity." He does not believe that infected tonsils are an important factor, but regards the effect of diet as paramount. The only way of deciding between them is to obtain and compare figures collected from all the main centres of population in the British Isles.

Last year I was fortunate enough to be closely associated with the formation of a children's cardiac clinic at the Johns Hopkins Hospital, Baltimore. Preparatory to this I had inspected all the main clinics of this nature in New York, Boston, New Haven, and Philadelphia. A fallacy has grown up in England that rheumatism is almost unknown in America, probably due to the fact that American physicians coming from the Southern and Western States, where the disease is rare, are always demanding to be shown rheumatic nodules in London hospitals. This does not apply to the Northern States, and New York claims nearly as much rheumatism as London. So much is this the case that a definite effort has been made to study the disease by means of an elaborate organisation centred in New York with cardiac clinics allied to it all over the country. In these the notes are taken on special forms, carbon copies of which are sent to the headquarters in New York.

The most perfect of such clinics for children is probably that of Dr. May Wilson, at the Nursery and Childs Hospital, New York, where a clinic of 500 children has been in existence for nearly ten years. Case notes are taken on the special forms mentioned, and the children classified into five groups:—

I. Able to carry on habitual physical activity.
IIa. Able to carry on with slightly diminished physical activity.
IIb. Able to carry on with greatly diminished physical activity.
III. Symptoms of heart failure at rest.
IV. Abnormal signs and symptoms.
V. Potential heart disease (uncomplicated chorea, &c.).

This classification is based on a careful history and physical examination, combined with a fluoroscopic tracing of the heart, the vital capacity, exercise tests, and in some cases electrocardiograms and leucocyte counts. Controversy has raged over the value of these tests, and from my own work which, in my opinion, is but relative, the tests being of little use if performed on a single occasion. In the case, for instance, of two children of the same age and size, who are eventually classified in the same group, one may have a different normal vital capacity than the other. The tests are, however, of great assistance in judging how any one case is progressing. If a child is going down hill, or if reinfection has taken place in an old case, although the weight, temperature, pulse, and physical signs may show little change, the vital capacity will usually fall at once, the heart will show a longer interval before it returns to normal after exercise, the leucocyte count will rise, while the fluoroscopic tracing will often show a slight dilatation that percussion has failed to demonstrate.

[1] THE LANCET, May 19th, p. 1005.
[2] Ibid., p. 1017.

These clinics are of inestimable value to the child who is under the constant care of the same physician over a number of years, and eventually handed on to an adult clinic with a complete clinical history. At the same time the clinics amass statistics which are easily examined. Dr. Wilson, for instance, has shown that tonsillectomy has little or no beneficial effect on chorea, and only slightly more on other forms of rheumatism; that rheumatism is not confined to the very poor, but is common in the children of the artisan class. Surely, if a system of clinics, modified to suit the conditions, were established in all the great medical centres of this country, where rheumatism is so universal, and its clinical interpretation so generally understood, it should be possible to amass such a vast number of figures, that the problem of predisposing factors could rapidly be settled. If at the same time these clinics were in close touch with laboratory research, it is not too much to hope that the great problem of what is the infecting agent, which has baffled the profession for so long, might at last be cleared up, and a new era inaugurated for the treatment of the disease.

I am, Sir, yours faithfully,

W. ROBERT F. COLLIS, M.B. Camb., M.R.C.P.,
late Temp. Assistant Physician, Johns Hopkins Hospital.
July 14th, 1928.

RESULTS OF SURGERY IN CARCINOMA OF THE CERVIX UTERI.

To the Editor of THE LANCET.

SIR,—I should be much obliged if you would allow me to correct the figures appearing in the report of the remarks I made last week at the International Conference on Cancer in your last week's issue (p. 142). These figures should read:—

Up to the end of 1927 he had performed Wertheim's operation 351 times. There were 53 deaths due to the operation—an operative mortality of 15·1 per cent. Of the 298 patients who survived the operation, 139 had died of recurrence, and of the remaining 159, 13 had died of other disease, of whom 6 survived over 5 years (3 survived over 10 years) and 30 had been lost sight of, 17 after they had passed the 5-year limit (5 had passed the 10-year limit), and there were 116 patients whom he was still in touch with. Of these latter 64 had passed the 5-year limit (35 had passed the 10-year limit), whilst the remaining 52 had been operated on at periods less than 5 years ago. In all, then, 87 patients had survived the operation 5 or more years, 43 of whom had survived it 10 or more years.

I am, Sir, yours faithfully,

VICTOR BONNEY.

Devonshire-place, W., July 24th, 1928.

DIPHTHERIA CARRIERS.

To the Editor of THE LANCET.

SIR,—I was much interested in Mr. Yearsley's letter on the occurrence of Klebs-Löffler bacilli in the cavity of a decayed tooth. I came across one such instance myself during my investigation on diphtheria carriers. The case was, briefly, as follows:—

A boy of 5 years of age had shown persistently positive throat and nose cultures for several months. He had very decayed teeth, and it was thought that these might be acting as foci for the growth of K.L.B. Cultures were taken from the gums around the base of six of the most decayed teeth. Yeasts were obtained from all of the teeth sockets, and, in addition, K.L.B. were obtained from the region surrounding a decayed right upper incisor. These decayed teeth were all removed, but the throat and nose cultures still remained positive, and the child did not clear up until he was put on nasal douches.

I did not allude to this case in my article, as I regarded the occurrence as too rare to be of practical importance.—I am, Sir, yours faithfully,

WM. CLUNIE HARVEY.

Borough Sanatorium, Brighton, July 22nd, 1928.

THE MAINTENANCE OF ORPHANS OF MEDICAL MEN DURING THE HOLIDAYS.

To the Editor of THE LANCET.

SIR,—The applications for assistance from the Royal Medical Benevolent Fund have in recent months been exceptionally numerous and urgent. A special plea which appears at this time of the year is for help for children. In coöperation with our Ladies' Guild and other bodies the Committee of this Fund is often able to secure admission of children of deceased medical practitioners to orphanages or schools where free education is given.

During the holidays provision must be made for these children, and when there are no friends or no friends in a position to receive them, the difficulty is great. The Committee does what is possible, but their efforts are much hampered by the lack of funds. Further subscriptions and donations will be gratefully received at 11, Chandos-street, Cavendish-square, London, W.1.

I am, Sir, yours faithfully,

July 23rd, 1928. THOS. BARLOW, President.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

CRITICISM OF HOME OFFICE ADMINISTRATION.

ON July 11th the House went into Committee on a vote of £283,588 for the salaries and expenses of the Home Office, Mr. J. F. HOPE (Chairman of Committees) being in the chair.

Factory Inspection.

Mr. RHYS DAVIES moved to reduce the vote by £100. He said that he did not think there was a better test of the efficiency of the Home Office than the number of accidents to workpeople in the factories and workshops of the country. In 1926 there were 139,963 accidents of that kind of which 806 proved fatal. In 1927 the number had reached the colossal figure of 156,974, of which 973 proved fatal. That was to say, that there was an increase in one year of 17,011 in the total number of accidents and of 166 in the number of fatalities. The Home Office had issued a circular dated May 16th, 1927, to employers stating that the Home Secretary had been much concerned to learn from the Chief Inspector of Factories that progress in the development of "safety first" arrangements in factories continued to be disappointingly small. The need of such an arrangement in industry elsewhere was great. The total number of accidents reported in the Factory Department showed no sign whatever of any substantial reduction. That circular showed that the Home Office was fully aware of what was happening in regard to the alarming growth of accidents in factories and workshops. He would not say a word against the personnel of the inspection department of the Home Office, but he felt sure that there was a distinct relationship between the number of accidents on the one hand and the number of inspectors employed and the number of visits paid to factories and workshops on the other. In 1914 there were 222 inspectors; that number has dwindled since until at the end of March, 1928, the number stood at only 206, or a decrease of 16. While the best employers no doubt did their duty according to the rules and regulations issued by the Home Office, there were some employers who paid no heed to the law in this respect and did all they could to escape their responsibilities. He urged that there ought to be an increase in the number of factory inspectors, and more women inspectors ought to be employed. He was delighted that the Home Office had instructed Sir Malcolm Delevingne to deliver a speech at Geneva in favour of a "Safety First" Convention, but it was very little use asking for an international convention in favour of the prevention of accidents when this country was not doing all it could in that direction on behalf of its own workpeople. There was another point which he would like to raise. In 1926 Parliament passed an Act prohibiting the use of white lead in painting for interior purposes. The time had arrived when they ought to know the results of the operation of that Act. He was a little alarmed at the figures relating to lead poisoning generally. In 1922 the number of cases reported to the Home Office was 247 with 26 deaths. The number grew until in 1924 it reached a peak figure which was very alarming indeed. The number of deaths in 1927 was reduced to 14, but the reported cases numbered 249 for 1927, or an increase of 2 over 1922. With regard to lead poisoning among house painters the figure in 1922 was 40 cases with 12 deaths, but in 1927 there were 98 cases reported and 21 deaths. That was indeed an alarming state of affairs. He would like to know how many offences had been notified under the 1926 Act and how many convictions had been obtained. In 1924 a Committee was appointed to inquire into artificial humidity in textile and non-textile factories, and he would like to know what had become of the recommendations of that Committee. A great many of these difficulties would have been cleared away if the Government had carried out its promise to pass a Factory Bill. It seemed to him that the Home Office ought to deal at once with the question of humidity in textile factories because the mortality and sickness figures of some of the approved societies covering textile operatives were really alarming, and some of the diseases shown in the statistics were attributable in part, he understood, to excessive humidity in these factories. He was pleased that the number of new cases of miner's nystagmus was apparently declining. In 1908 the new cases were 386, in 1914 3218, and in 1926 1771. He would like to know what means were being taken to prevent this disease spreading and to deal with it better under the Workmen's Compensation Act. He understood that the Home Office was already conducting an inquiry into silicosis, and he could assure the Government that it was high time that something was done. The problem was urgent because of the increased suffering among coal-miners from this disease. In 1922 there were 45 cases of anthrax reported to the Home Office and five deaths, and he was pleased to say the figures had declined in 1927 to 31 and 2 respectively. The Home Office had appointed a Committee to inquire into the cost of disinfecting East India wool, which was very largely responsible for a number of anthrax cases in this country. He was told that cases had occurred in Bermondsey where men had contracted the disease from hides and skins. He wished to ask whether all these materials could not be disinfected before leaving the port of origin. What was the international position in this matter? He would say, in conclusion, that it was not good enough that in these enlightened days, when they had a much better medical service and better safeguards in factories and workshops, that they should have to register 17,000 odd accidents in 1927 over 1926.

Certifying Surgeons.

Mr. HOLLINS complained of the cumbersome method which surrounded the operation of the Workmen's Compensation (Silicosis) Act of 1918. The Act could only be applied to those industries which made application and for which the Home Office made an Order. Committees had to be appointed and investigations made, and the greatest difficulty was the obstructive methods which could be adopted either by the employers' representatives or the workers' representatives. In the three industries which up to the present had been before the Home Office inquiry there was only one happy result. Owing to this cumbersome machinery and the waste of time involved in obtaining an Order, a very meagre fraction of the total number of workers affected had been brought under the scheme since the Act was passed. The only proper method was to have the disease scheduled as an ordinary occupational disease. Lead poisoning was a cumulative disease and one never knew when the effect would show itself. Persons had shown symptoms of the disease several years after they had left the lead process, and because of the lapse of time since they had worked the process they could not make a claim for compensation. He would urge that if the Home Office could not extend the limit of time indefinitely during which a lead process worker could make such a claim it ought, at any rate, to be extended to a period of three or five years. The present method of appointing certifying surgeons was not a proper method. The best men might be appointed, but they were not appointed because they were experts in lead poisoning, silicosis, or anthrax. In the pottery industry they were paid 1s. per examination, with the result that cases had been known where 20 workers had passed before the certifying surgeon in as many minutes. It was impossible for anybody to make an examination of workers in so short a period of time. Certifying surgeons should be whole-time men without private practice. This had been tried in the Refractories Industries scheme when the tuberculosis officers made the examinations in the first instance. Afterwards permanent full-time men were appointed and it was found that the examinations were more efficient and the data more valuable. He hoped that the Home Secretary would give his attention to the three points he had raised.

Mr. MACKINDER said as one connected with the textile trade he wished to emphasise what had been said regarding the insufficient staff of factory inspectors. He had been

from 1914 until last year a member of the Departmental Committee on Anthrax. In 1927 19 cases from wool were reported, three from horsehair, nine from hides and skins, and one from other industries. He would like to know how many of these cases were fatal and how many non-fatal. He did not know whether it was possible—he hardly thought it was—to disinfect the hides in the country of origin, but he was quite certain that it was possible to disinfect the wool in the country of origin. He knew that the number of cases of anthrax was largely decreased as the result of the operation of the very fine Government disinfecting station at Liverpool, but that only dealt with Persian and Egyptian wool, and there were any number of dangerous wools. There was goat hair and camel hair which were also dangerous. He would like the Home Office to interest itself in the inspection of the material used in the production of shaving-brushes. He did not know whether the Home Office was aware of the tremendous danger that the public were running from the use of shaving-brushes made from what was called Chinese tail, or mane hair, which was a material liable to be infected with anthrax. It reached this country in a roundabout way and was made into the cheapest imitation badger hair shaving-brushes, from which it was very easy to get this dangerous and loathsome disease. The Departmental Committee proved that it was possible to get these brushes and materials disinfected and made safe.

A Second Ministry of Health.

Lieut.-Colonel FREMANTLE said that the latest figures with regard to lead poisoning given in the report for 1926 were certainly disconcerting. It was true that there were fewer cases, but there were something like double the number of deaths from lead poisoning in the last year reported upon as compared with the previous year, and that was a matter which needed to be cleared up. It was no doubt too early to get definite information as to how far the Act of 1926 had taken effect; but if the Home Office could give them any information they would be glad to have it. The general line of the 1926 Act was to prohibit painting by women and young persons and to give power to the Home Secretary to issue regulations. That he thought was the right method. He objected to prohibition wherever it was possible to avoid it. They wanted to work up as much as possible the question of education and inspection. The factory inspector was one of the most valuable administrators and forms of education. But they could not expect to get efficient inspection when the inspectors came from a distance. They must delegate the people who were on the spot, who could drop in and see how things were going on. There was already a certain amount of sanitary inspection and the sanitary inspectors and medical officers of health had to furnish copies of their annual reports. He wanted to extend that system. He believed that they could extend it very considerably in the larger cities and boroughs, where they could use the local medical officer of health more and more. That was a matter which had to be remembered when they were considering the inadequacy of the inspectorate and the actual official reply that they could not afford to have more inspectors. He thought they were on the wrong line if they were seeking to increase the centralised bureaucratic inspectorate. They ought to open up the factory system to local people, who would gladly take an interest in it. He was afraid that the suggestion made by Mr. Hollins that certifying surgeons should be whole-time men was quite impracticable. These surgeons had to be dotted about all over the place. They ought to be given an opportunity of being more useful than they were at present. The certifying factory surgeon only had certain inspections detailed to him when called for by the factory inspector. He could not be expected, therefore, to sift through the whole of the cases that could be improved because he only had cases of definite illness or cases that required attention by the lay inspector. He would like to have some account of the extremely beneficent welfare work in the factories which had been extended so much since the war. It was a very hopeful work, instituted during the war in the Department of Munitions by one of the factory medical inspectors attached to the Ministry for the purpose, and the Home Office had followed it up since. His latest information was that statutory welfare orders had been made for 14 industries so far. He would be glad to know if they were going to be extended further. He had always taken intense interest in the Factory Department of the Home Office. It was nothing less than a second Ministry of Health on which the health and efficiency of the nation depended.

Mr. JENKINS said that in consequence of recent appeals in regard to the effect of silicosis among miners the Home Office had appointed a medical man, but one medical man for the whole country was totally inadequate to meet the needs of the mining and other industries and to investigate and make reports on cases. The Home Office ought to appoint larger staffs of medical men for this purpose. The same applied to nystagmus.

Reporting of Accidents.

Dr. VERNON DAVIES said that he was an old certifying factory surgeon of over 20 years' experience. There had been a justifiable complaint that evening of the small number of factory inspectors. During the war the Home Office took what he regarded as a very retrograde step. Up to that period practically all accidents were notified to the certifying factory surgeon, who had to visit the factory to see the identical place where the accident occurred, to get a report, then proceed to see the injured person and get his or her report, and finally to issue a report to the factory inspector and so to the Home Office. By that process two or three very important things were done. In the first place they were sure that the mill authorities reported the majority of their accidents, because they never knew what doctor a particular patient might go to, and news of an accident might leak out and reach the factory surgeon. Therefore they were compelled to carry out the regulations and report their accidents more closely. The second good point was that it enabled them to forward true accident reports. On more than one occasion he found in his investigations that the report sent to him by the mill authorities was not accurate. On the other hand he knew from his experience that unfenced machinery was not always the fault of the employers. It was sometimes the fault of the workers; they did not like the guard, and they removed it. The Home Office decided to do away with this reporting of accidents to the certifying surgeon because it cost the country the enormous sum of £7000 per annum. It was quite possible to report an accident so as to create a false impression, and it was possible that there were many accidents which ought to be inspected by the factory inspector which were not so inspected. Therefore in his opinion the Home Office took a retrograde step by cancelling the reporting of accidents by certifying surgeons. That procedure was to the advantage of the Home Office, to the advantage of the workers, and to the advantage of the mill, and he hoped that some time or other they would reconsider the position and see if they could not go back to the old method of reporting accidents. The fact that the mill authorities knew that the factory doctor might be in the mill any day kept them up to the mark. With regard to nystagmus the figures were going up. Some time ago, when he was looking at the figures for Belgium, he found that there was not the same rate of increase in nystagmus there as there was in this country. In Belgium compensation was only given for nystagmus for a certain definite time, at the end of which the compensation ceased, and for some remarkable reason the cases improved. That reminded him of the old days of the "railway spine," when people after railway accidents got concussion of the spine and never got better until the case was settled by the company. Sir William Thorburn, an eminent surgeon who was probably the greatest expert on "railway spine" in Europe, came to the conclusion and advised all his clients that the patient would never get better until the claim was settled. These people were not malingering, but there was some psychological condition which prevented them getting better until their claim was paid. He wondered whether in this country the same sort of thing was happening in regard to nystagmus, and whether it would not be better instead of saying that the man should be paid so much per week to give him a lump sum by way of compensation, which might have some effect on the recovery of the patient.

Mr. CONNOLLY: Do you think that as a medical man?

Dr. VERNON DAVIES said that he was arguing this matter from a medical standpoint and suggesting that a new method of compensation might be tried as an experiment. Silicosis was becoming more important every day, and he thought that it had been grossly neglected in this country. It really was rather astonishing, considering our huge mining industry, employing an enormous number of men, that a medical man should only have been appointed a few months ago by the Government for the first time to advise them on the medical conditions affecting this industry. The mining industry had been run for years without the slightest medical supervision. Another remarkable fact was that if a child wished to work in a factory or workshop it had to be examined by a certifying surgeon who certified whether the child was fit to work or not. That was not the case so far as the mines were concerned, and over and over again he had refused to pass children for work in the cotton mills because they were not strong enough, but they could laugh at him and go and get work in the pits without any examination at all.

Sir VIVIAN HENDERSON, Under-Secretary for the Home Office, said that that matter was not under the control of the Home Office.

Miners and Silicosis.

Dr. VERNON DAVIES said in that case he would not pursue the subject. Silicosis by itself was not a very dangerous disease. The worst it did was to cause shortness of

breath and perhaps a little difficulty in breathing. The danger came in when it became contaminated or infected with tubercle, and when they got that condition it was extremely dangerous and fatal. Considering the risks which miners ran in working in this rock dust it was high time that stringent regulations were made by the Home Office to deal with the problem. They had to bear in mind that certain people were perhaps more liable to infection by tubercle than others, and therefore in any scheme brought up to deal with the matter the health of the miner prior to and during his employment was very important. In any scheme brought forward to make silicosis a scheduled disease he presumed that the Home Office would have some control. He was convinced that the examination of the patient for silicosis should not be given to ordinary medical men, but should be done by Home Office specialists, because it was extremely difficult to diagnose accurately, especially in the early stage. It was very essential to have an expert radiographer, and the Home Office should consider the advisability of appointing a few specialists in this particular disease who could go round the country examining patients at different mines at definite regular periods. It was no use waiting until the man could not work; he should be examined regularly. It would only be necessary to examine the mines where there was a large amount of silica. Coal dust itself did not produce silicosis; in fact it did good, because it lessened the liability to consumption. Colliers were among the healthiest people in the country, and statistics proved that they were less subject to pulmonary tuberculosis than any other grade of workers, except agricultural workers. If his suggestion was carried into effect they would improve the health of the miner and prevent a certain number of deaths by getting a man away from the pits when he was in a recoverable state.

Shuttle-kissing.

Mr. T. SHAW said there was a museum in London which contained an extraordinarily interesting collection of safety appliances for machines and also a number of diagrams of great interest and value to those engaged in industrial occupations. He wished to pay his tribute to that part of the Home Office work and to express the hope that it would be developed. The principal thing to which he wished to refer—and he believed that the matter could be dealt with by administrative order from the Home Office—was the practice known in Lancashire as shuttle-kissing. They never could get a body of medical opinion to say that this practice was dangerous, yet nearly every weaver over 20 years of age in Lancashire had either very badly decayed teeth or was wearing artificial teeth. Surely there was a connexion between the constant kissing of the shuttle with the drawing of the weft and the dust into the mouth and this extremely high average of decayed teeth among weavers. In any case it was a disgusting, dirty, and dangerous habit. It often happened that during an influenza epidemic a weaver left his work with influenza. The weaver who took his place used the shuttle and quickly went off work with influenza. It often happened that two, three, or even four weavers used the same loom and the same shuttle and went off work one after another. Further, in cases where colours were used of a free type the weaver had his lips and mouth dyed by the colour that was used. He had seen weavers with their lips, teeth, and inside of the mouth green, blue, and red, and the whole of their arm covered with a kind of fine dust which "ran" when perspiration took place. They could understand what it meant to a person drawing that kind of thing into the mouth day in and day out. He distinctly remembered a case which happened in his youth when he was working in a mill. A man who was afflicted with a very loathsome disease went away from his work and the man who followed him on his looms contracted the same disease. Nothing ought to stand in the way of the replacement of the shuttles by hand-threaded shuttles, if that could be done. He asked the Home Office seriously to consider making an order which would do away with this dangerous and disgusting practice.

Lieut.-Colonel WATTS-MORGAN urged the appointment of a larger number of medical men to carry out research work and inspection. He also suggested that compulsory insurance against injuries sustained by these workers should be applied to all colliery companies.

Mr. CONNOLLY referred to certain new draft regulations which he said were about to be issued by the Home Office in connexion with the use of the oxy-acetylene welding machine in ships and elsewhere. This question arose out of a fatal accident on the Mersey in which two men lost their lives through an explosion in a confined space. The proposed new regulations which he believed were based upon that accident provided that prior to a welding operation by the oxy-acetylene machine there must be first of all a purifying of the air in the space where the machine was to work and that during the operation there must be a continual supply of fresh air. That was all very well as far as it went, but to meet practical needs the use of this machine in confined spaces ought to be totally prohibited. Provision should be made that nothing but the electric welder should be used in cases of this kind.

Under-Secretary's Reply.

Sir V. HENDERSON, replying to the debate, said that if they were going to make any comparison of figures relative to industrial accidents the two years that they ought to compare were 1927 and 1925. In 1925 there were 159,693 accidents, of which 944 were fatal, as compared with 156,974 in 1927, of which 973 were fatal. Therefore on figures alone he did not think that any great case could be made out against the Factory Department of the Home Office. He agreed that there was a slight reduction in the inspectorate compared with the pre-war staff. The present position, he admitted, was not satisfactory, and he hoped it might be possible to obtain an increased number of inspectors. But there had been no slackening in regard to the inspection of factories. That inspection had been more complete and thorough than in previous years, and if there had been any slackening it had been in regard to the inspection of small workshops where there was not generally the same risk. This question must to a large extent be mixed up with that of the Factories Bill. That Bill had been held up for the moment—he hoped only for the moment—but when it reached the Statute Book it would carry with it obligations on the Factory Department which would necessitate an increase in the number of inspectors. In order to show that the Home Office really had this matter at heart the Home Secretary had promised in the autumn to set up a small committee to go into the question of the staffing and organisation of the factory inspectorate at the Home Office, and he (Sir V. Henderson) hoped that he might be chairman of that Committee. Therefore the matter would not be lost sight of. As a result of the "Safety First" circular, which had been referred to in the debate, the Home Office had received very satisfactory assurances from a number of important employers' organisations, and they were assured that the matter was bearing fruit by reports they had received from their inspectors. As regarded the danger from shaving-brushes infected with anthrax, the Ministry of Health already had power to prohibit the importation of dangerous brushes. A proposal had been made to both sides of the painting industry to coöperate with the Home Office in carrying out the lead paint regulations. That coöperation had been given and the figures proved that the position was improving. So far as nystagmus was concerned, he had not the figures for 1927. The Home Office was only concerned with nystagmus from the point of view of compensation and not from that of prevention, which was a matter for the Mines Department. He fully endorsed everything which Mr. Mackinder had said about the excellent work which was being done at the disinfecting station at Liverpool, but he would realise that it was not possible for that station to deal with the disinfection of hides. No satisfactory system had yet been discovered for that purpose, although inquiry was being made. The report as to the further scheduling of wool for disinfection was now in the hands of the Home Secretary, but had not yet been published. From the point of view of expense it was extremely reassuring—much more so than some people anticipated. Hon. Members ought to rest assured that this matter would receive very sympathetic consideration. So far as the international aspect of the question was concerned, Australia and India had always refused to coöperate, and so long as that attitude was maintained it was really impossible to deal with the question internationally. The question of silicosis was surrounded with enormous difficulties. Whilst the Home Secretary was prepared to consider whether he could amend or improve or expedite matters it was quite likely that it would entail legislation, and therefore he (Sir V. Henderson) could not discuss it that night. With regard to what Mr. T. Shaw had said about shuttle-kissing, the Home Secretary had announced that he would be quite prepared to consider dealing with it in a clause in the Factories Bill if he could have some general information that it was desired by the vast majority of the workers concerned.

Mr. SHAW said that he would give that information at the earliest possible opportunity.

Sir V. HENDERSON said that he was inclined to agree with some of the strictures passed by Mr. Hollins on the subject of certifying surgeons. But if they were going to alter the whole system of certifying surgeons legislation would be required, and therefore it was a matter which he could not discuss in detail that night. There was also a very important matter which not only arose generally as to the certifying surgeons, but particularly in regard to silicosis, and that was that they knew that the certifying surgeon in normal circumstances was not competent to examine silicosis cases. If they were to alter the whole position of the certifying surgeon and have a full-time medical expert on a definite salary they would have to get a Home Office medical staff

or something of that kind. Quite apart from legislation that would require some compensation fund or medical fund into which the employers would pay, so that the medical men could be paid for their services. The matter was extremely complicated, but it was being looked into. While he would be glad to look into the point raised by Mr. Connolly in regard to the use of the oxy-acetylene welding machine he was not prepared to give any definite undertaking on the matter at the moment.

The motion to reduce the vote was negatived by 212 votes to 110.

BILLS ADVANCED.

The Food and Drugs (Adulteration) Bill passed through Committee on recommitment in the House of Lords on Wednesday, July 18th. This measure passed the Report stage in the House of Lords on Thursday, July 19th. The Child Destruction Bill was read a first time in the House of Commons on Tuesday, July 17th.

In the House of Lords on Monday, July 23rd, the Marriages (Prohibited Degrees of Relationship) Bill was read a second time. The Food and Drugs (Adulteration) Bill was read the third time, and passed. The Reorganisation of Offices (Scotland) Bill passed through Committee.

HOUSE OF COMMONS.

WEDNESDAY, JULY 18TH.

Lysol Poisoning.

Sir F. MEYER asked the Home Secretary whether his attention has been called to the numerous deaths, either accidental or suicidal, following upon the taking of lysol, which had recently been reported, and if he could state the total number of such deaths during 1927 and also during the first six months of 1928.—Sir W. JOYNSON-HICKS replied: I am aware that of recent years there has been a considerable increase in the number of deaths from the taking of lysol, and my Department has brought the relevant mortality statistics to the notice of the Inter-Departmental Committee which is considering the law relating to the sale of poisons. The figures for 1928 are not yet available; those for 1927, which are provisional, are as follows: Deaths from lysol poisoning: by accident, 13; by suicide, 361.

Registration of Births and Deaths.

Sir NICHOLAS GRATTAN-DOYLE asked the Minister of Health whether the registration of births and deaths, under his plans for the reform of the machinery of local government, would be severed from the poor-law administration.—Mr. CHAMBERLAIN replied: The exact arrangements to be made in regard to the registration service in connexion with the scheme of local government reform are still under consideration, and my right hon. friend regrets that he is not in a position to make a statement on the subject.

THURSDAY, JULY 19TH.

The Dangers of the Use of Allonal.

Mr. Robert Young asked the Secretary of State for the Home Department whether the German drug allonal was among those governed by the Dangerous Drugs Act; if not, whether he was aware of the growing demand for this drug and of the danger entailed in its use; and whether he would take steps to ensure that allonal should not be available without a doctor's prescription.—Sir WILLIAM JOYNSON-HICKS replied: The Dangerous Drugs Acts do not apply to "allonal," which is understood to be the proprietary name given by a Swiss firm of manufacturing chemists to a derivative of barbituric acid. I am aware of the dangers, and have brought the question of the need for further restrictions in the case of these drugs before the Inter-Departmental Committee which has been examining the law relating to poisons.

Slaughter of Tuberculous Cows.

Mr. BUXTON asked the Minister of Agriculture the number of cows affected by tuberculosis which had been slaughtered in 1926 and 1927 in pursuance of the Tuberculosis Order, 1925; and whether he was satisfied that the order was fully operative.—Mr. GUINNESS replied: The number of cows (including heifers) slaughtered under the provisions of the Tuberculosis Order, 1925, in 1926 and 1927 is 16,522 and 16,708 respectively. Local authorities have now completed their arrangements for carrying out the requirements of the Order, and I am satisfied that the Order is properly executed.

Mr. BUXTON: Does the Minister not think that in view of the increase, an increase in the staff of inspectors is needed?—Mr. GUINNESS: I do not think so; the local authorities seem to be carrying out their duties satisfactorily.

Treatment of Lunacy and Mental Disorders.

Mr. PETHICK-LAWRENCE asked the Minister of Health what steps, if any, he was proposing to take to implement the administrative recommendations of the Royal Commission on Lunacy and Mental Disorder; and, in particular, whether he could see his way to do anything for those suffering from the effects of sleepy-sickness who were not suitable either for lunatic asylums or poor-law institutions.—Mr. CHAMBERLAIN replied: I have arranged that the administrative recommendations of this Commission are borne constantly in mind in the day-to-day administration of the Lunacy Acts, and are worked to so far as is practicable in present circumstances. The problem presented by the after-effects of encephalitis lethargica is under constant review; and it will no doubt be possible to deal with certain of these patients under the Mental Deficiency Act passed last year, which amended the definition of mental defect for this purpose.

Dr. Voronoff's Experiments.

Mr. BRIANT asked the Secretary of State for the Home Department if the licences granted for permission to practise vivisection include power to carry out such operations of the grafting of glands as had been practised by Dr. Voronoff in other countries.—Sir WILLIAM JOYNSON-HICKS replied: I assume that the hon. Member refers to the reported experiment on a monkey to which his question of June 13th related. No such experiment has been, or will be, permitted in this country.

Deaths from Puerperal Causes.

Mr. VIANT asked the Secretary of State for the Home Department whether he was prepared to order that an inquiry shall be held in all cases where death had resulted from puerperal causes.—Sir WILLIAM JOYNSON-HICKS replied: I have no power to make such an order. But I understand that my right hon. friend, the Minister of Health, is arranging, with the concurrence of the British Medical Association, for maternal deaths to be investigated for scientific and public health purposes by competent medical officers in each area, and that these investigations will be considered by the Committee on Maternal Mortality which he has recently appointed.

Voluntary Health Insurance Contributors.

Major CARVER asked the Minister of Health if he was still considering the possibility of grafting on to existing national health insurance a scheme for the benefit of voluntary contributors other than those now included.—Mr. CHAMBERLAIN replied: The possibility of widening the scope of voluntary insurance under the joint scheme of National Health Insurance and contributory pensions is still under consideration, but I regret that I have not yet found any satisfactory solution of the very serious difficulties which any such proposal presents.

MONDAY, JULY 23RD.

Exemption from Duty of Scientific Films.

The House considered the Finance Bill on Report.

Captain FRASER moved a new clause, providing that the Customs duties imposed by Subsection (1) of Section 3 of the Finance Act, 1925, on negative and positive cinematograph films should cease to be payable in the case of a film which was certified by the Royal Society of London for Promoting Natural Knowledge to be solely an illustration of scientific investigation for exhibition before members of a recognised scientific body, and which was imported only for the purpose of such exhibition free of charge. The clause also provided that if any person exhibited otherwise than as provided under the clause, any film which had been exempted from duty under the section, he should, on summary conviction, be liable in respect of each offence to a fine not exceeding £50. Captain Fraser said that in 1925, under the Finance Act, a tax was placed on films imported into this country. At that time it was probably not realised that films, apart from being a means of amusement and education, were also sometimes used as a record of scientific work of no interest to the general public, but of very great value to a limited number of scientific workers. In the last two or three years great developments had taken place in the technique of the use of films as a record and illustration of scientific research. It was generally agreed that it was undesirable to place a tax upon scientific work, or indeed upon knowledge of any kind. When the matter was discussed on an earlier stage of the Finance Bill, the Financial Secretary to the Treasury and the Chancellor of the Exchequer said that the administrative difficulties were very great, but that they would do their best to meet the point. He (Captain Fraser) was happy to say that, by the instructions of the Chancellor of the Exchequer, conversations had taken place with the Customs officials which led him (Captain Fraser) to suppose that this clause could be

worked by them if the House wished to pass it. He was able to say that the Royal Society would undertake the liability which it was suggested they should be asked to undertake. He therefore asked the Financial Secretary if he would accept the clause. He could assure him and the House that if he was willing to do so, men of science would be very grateful and that it would be a gesture of goodwill to those who were doing most valuable work. (Cheers.)

Mr. CRAWFORD, in seconding the clause, said that if the Government could make this concession it would be a help to the scientific and medical world. It would also give a stimulus to a small, but very notable, industry in this country which was concerned in the development and preparation of the best kind of film. He had within his own knowledge two establishments in London where, with the slightest encouragement, negatives of films of all sorts would be sent from all over the world—films which it was desired should be treated in the most expert way possible. This industry had been interrupted a good deal by the imposition of duties on the films, and he hoped the Financial Secretary to the Treasury would realise that if he could make this concession he would do a great deal to help this industry, and would help the scientific world and give a tremendous stimulus to the preparation of scientific films for use in medical and surgical cases.

Mr. A. M. SAMUEL (Financial Secretary to the Treasury) said that he remembered the previous discussion on this matter. The Chancellor of the Exchequer and he were on that occasion very sorry that they could not then accept the new clause for the reason that it was difficult to get a definition of "scientific investigation." The Chancellor of the Exchequer then said that he would look into the matter and see if he could find a way out. He (Mr. Samuel) was very glad to say that he could now accept the clause. They had found a way out to help Captain Fraser. The Royal Society of London was good enough to say that it would certify, when required, a film that was said to be an illustration of scientific investigation. That was a statement which the Customs officials could easily accept. He could not pledge himself as to the cost, but he did not think it would amount to more than £200, and probably would not be so much as that, because in many cases films would not be imported if the duty were imposed on them. The Government were delighted to be able to accept the clause. (Cheers.)

The clause was read a second time and added to the Bill.

Women Officials in the Board of Education.

Mr. PETHICK-LAWRENCE asked the President of the Board of Education whether his attention had been drawn to the fact that, excluding the inspectorate, and those employed on clerical duties, there were no women in the Board of Education; and whether, in view of the desirability of associating women with this work, he would take steps when future vacancies occurred to appoint women by promotion, transfer, or otherwise to responsible posts under the Board.—Lord EUSTACE PERCY replied: In addition to the women inspectors and women executive and clerical officers, the Board of Education staff includes a chief woman medical adviser, two women medical officers, a woman administrative officer, and a woman librarian. A woman was among the six candidates recently interviewed for a vacancy in the administrative class, which was filled by promotion, and women are equally eligible with men for vacancies filled from the Civil Service competitive examination.

Social Hygiene in the Colonies.

Viscount SANDON asked the Secretary of State for the Colonies whether the Under Secretary of State, on his recent visit to the Straits Settlements, investigated any of the problems dealt with in the 1924 Report on Social Hygiene; whether the situation was now better or worse than at that time; and whether any further steps were to be suggested or taken to remedy the evils that were therein stated to exist.—Mr. AMERY replied: The Under Secretary of State for the Colonies had some discussion about this matter with the Governor of the Straits Settlements and his advisers during his recent visit to Malaya. The Government concerned are proceeding on the lines recommended by the Committee in question, which recognised that improvement in this, as in other matters of social welfare, must necessarily be gradual. I understand that the situation already shows some improvement, and that it is not considered that any steps other than those recommended by the Committee can usefully be taken at present.

TUESDAY, JULY 24TH.

River Pollution and Public Health.

Sir ARTHUR CHURCHMAN asked the Minister of Health whether his attention had been called to the serious pollution of the River Gipping caused by effluent from the artificial silk works at Stowmarket; whether he was aware that there had been numerous cases of illness among human beings and poisoning of stock as a result; and whether, to avoid the consequences of further delay in abating the nuisance, he would authorise the local authorities concerned to take immediate action without waiting for an official inquiry.—Sir KINGSLEY WOOD replied: My right hon. friend is aware of this case. He has no confirmation of cases of illness or of poisoning of stock from pollution. My right hon. friend has, however, received from the Rural District Council an application for consent to take proceedings against the company, and has directed a public inquiry to be held at the earliest practicable date into the application. He is afraid that an inquiry must first be held.

Poisoning Caused by Lemonade.

Mr. WILLIAM THORNE asked the Minister of Health if his attention had been called to a report by the Newcastle city analyst about the illness of at least 50 of the staff of one of the big shops in the city caused by antimony compounds contained in the lemonade which the assistants drank; if he was aware that the cause of the illness was in consequence of the enamel on the buckets which contained the made-up lemonade; and if he could state whether he intended taking any action in the matter.—Sir KINGSLEY WOOD replied: My right hon. friend's attention has been drawn to this case and he understands that the facts are as stated in the question. The city medical officer of health is preparing a report on the occurrence and on receipt of that report my right hon. friend will consider what action, if any, can be taken.

Medical News.

UNIVERSITY OF LONDON.—At recent examinations the following candidates were successful:—

M.D. EXAMINATION.

Branch I., Medicine.—Margery G. Blackie, London (R.F.H.) Sch. of Med. for Women; Frank R. Fletcher, London Hosp.; Francis H. K. Green, St. Bart.'s Hosp.; Bertram H. Jones, St. Thomas's Hosp.; John W. Joule and Robert A. E. Klaber, St. Bart.'s Hosp.; Geoffrey L. S. Kohnstam, King's Coll. Hosp.; Patrick H. O'Donovan, London Hosp.; Navroji Kharshedji Sahiar, Grant Med. Coll., Bombay, and Univ. Coll. Hosp.; and Ian H. Stevens, Univ. Coll. Hosp.

Branch II., Pathology.—Cicely Weatherall, London (R.F.H.) Sch. of Med. for Women.

Branch III., Psychological Medicine.—Norman Moulson, St. Bart.'s Hosp.

Branch IV., Midwifery and Diseases of Women—John J. R. Robinson, St. Thomas's Hosp.; Stephen J. Scurlock, London Hosp.; and Arthur J. Wrigley (University Medal), St. Thomas's Hosp.

Branch V., State Medicine.—William G. Booth, Guy's Hosp.

Branch VI., Tropical Medicine.—Percy C. C. Garnham (University Medal), St. Bart.'s Hosp.

M.S. EXAMINATION.

Branch I., Surgery.—Geraldine M. Barry, London (R.F.H.) Sch. of Med. for Women; Harold C. Edwards, King's Coll. Hosp.; and Gerald H. Steele, Univ. Coll. Hosp.

DIPLOMA IN BACTERIOLOGY.

Mohamed Abd El-Hamid Gohar, Kumarapuram Vythilinga Krishnan, Ram Bihari Lal, Marion Watson, and James A. Young.

B.SC. EXAMINATION.

Physiology.—Agnes Shore (first-class honours), Univ. Coll.; and Effie Slater (second-class honours), Univ. of Leeds.

At a meeting of the Senate on July 18th an offer was accepted from H.R.H. the Duke of Connaught to transfer to the University the Duchess of Connaught Memorial Hostel, and a committee was appointed to manage it as a hall of residence for students of European origin, preference, if necessary, being given to men from Canada and the other Dominions.

Mr. Robert Donaldson, M.D., Ch.B. Edin., F.R.C.S.E., D.P.H., was appointed as from August 1st, 1928, to the Sir William Dunn Chair of Pathology tenable at Guy's Hospital Medical School. Dr. Donaldson was demonstrator in pathology, University of Sheffield, 1909–11; senior demonstrator and lecturer, Bristol University, 1911-12; pathologist to the Royal Berks Hospital, Reading, 1912–20; and since January, 1920, has been pathologist to St. George's Hospital, and lecturer in pathology in the medical school there. He is also pathologist to St. Mary Abbot's Hospital.

the Princess Louise Hospital for Children, and the Hospital of St. John and St. Elizabeth.

Mr. S. J. Cowell, M.B., B.Ch. Camb., M.R.C.P., M.R.C.S., was appointed as from Sept. 1st, 1928, to the University Chair of Dietetics tenable at St. Thomas's Hospital Medical School. Dr. Cowell was appointed in December, 1920, junior assistant to the medical unit at University College Hospital, and since January, 1923, has been assistant to Prof. E. Mellanby at the University and Royal Infirmary, Sheffield. His recent work includes papers on the effect of iodine on hyperthyroidism in man and the action of irradiated ergosterol in human rickets.

Mr. H. D. Wright, M.D., Ch.B., D.Sc. Edin., B.A. Tasmania, M.R.C.P.E., was appointed as from Oct. 1st, 1928, to the University Readership in Bacteriology tenable at University College Hospital Medical School. Dr. Wright obtained the M.D. degree and gold medal at the University of Edinburgh in 1925, and the D.Sc. degree in 1927. He was Lister Research Fellow of the R.C.P., Edinburgh, in 1922. From 1920–23 he was lecturer in bacteriology in Edinburgh University, and from 1921–23 assistant director of the Research Laboratory of the Royal College of Physicians, Edinburgh. Since 1923 he has been lecturer in bacteriology at University College Hospital Medical School. He is assistant editor of the *Journal of Pathology and Bacteriology*.

Mr. S. L. Baker, M.R.C.S., D.P.H., was appointed as from Sept. 1st, 1928, to the University Readership in Morbid Anatomy and Histology tenable at Middlesex Hospital Medical School. Mr. Baker has held the posts of pathologist to the King Edward VII Sanatorium, Midhurst, 1919–22; senior assistant in the Bland-Sutton Institute of Pathology since July, 1922, and lecturer in morbid histology at the Middlesex Hospital Medical School since May, 1923.

The title of Professor of Morbid Anatomy in the University was conferred on Dr. G. W. de P. Nicholson in respect of the part-time post held by him at Guy's Hospital Medical School.

The title of Professor of Bacteriology in the University was conferred on Dr. Alexander Fleming in respect of the part-time post held by him at St. Mary's Hospital Medical School.

In view of Mr. S. A. Courtauld's munificent gifts for the Institute of Biochemistry and the Medical School of the Middlesex Hospital, it was resolved that the title of the University Chair of Biochemistry tenable at that Medical School should be changed to "Courtauld Chair of Biochemistry in the University of London."

King's College of Household and Social Science was admitted as a school of the University in the Faculty of Science (Household and Social Science only).

Sir Holburt Waring was appointed representative at the Seventh Centenary Celebrations of the University of Toulouse to be held in June, 1929. He has also been elected chairman of the Finance Committee.

Dr. John Fawcett has been elected chairman of the Committee of the Medical Members of the Senate.

Dr. E. Graham Little, M.P., has been re-elected chairman of the Council for External Students.

UNIVERSITY OF MANCHESTER.—The following post-graduate courses have been arranged for 1928–29. They will be mainly clinical in character. A whole-time intensive course in medicine and surgery will be held from Sept. 10th to 29th, and one in obstetrics and gynæcology from Sept. 29th to Oct. 6th. Practitioners taking this last course will reside at St. Mary's Hospital, Whitworth-street, Manchester. A part-time course in diseases of the eye will be held from Oct. 2nd to Nov. 8th. In the spring of 1929 part-time courses on the application of radiology to medicine in diagnosis and treatment, on diseases of the skin, and on clinical pathology will be given. Clinical assistantships are offered in the medical, surgical, and special departments of the Manchester Royal Infirmary, Ancoats Hospital, and certain special hospitals. Further information, tariff, and syllabus can be obtained from the Dean of the Medical School.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH.—The first woman to be elected Fellow of the College was introduced at the quarterly meeting of the College held on July 17th, when Dr. A. Justina Wilson, London, took her seat. The President, Dr. Robert A. Fleming, was in the chair.—Dr. G. D. T. Kerr Cross (Natal), Dr. R. H. H. Newton (Edinburgh), Dr. Thomas Ferguson (Darlington), Dr. B. H. H. Neven-Spence, and Dr. R. D. Mackenzie (Edinburgh) were elected Fellows of the College.—Dr. Robert Dods Brown has been appointed Morison lecturer for 1929.—It has been decided to confer the honorary Membership of the College upon Dr. John Stewart Muir, of Selkirk.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.—At a meeting of the College, held on July 19th, the following candidates, having passed the requisite examinations, were admitted Fellows:—

William F. Angus, George I. Boyd, Harold C. Carter, Harman Singh Chhachhi, Ronald O. Davidson, Nevile J. Everard, Edgar S. Freshman, Fred C. Hunt, Stewart Hunter, Clifford S. James, Edward N. Jamieson, Robert O. Jones, James Kemyee, Kedar Nath Kulahreshiha, Arthur Leigh, Bantwal Canapathy Hallya, Willard G. Maclean, Ian H. MacGillivray, Cyril M. Plumptre, George E. J. A. Robinson, Isidore Rosin, Arthur J. Stout, Robert Strang, William R C. Stowe, Beatrice E. Turner and Robert Watson.

The Ivison Macadam Memorial Prize, consisting of bronze medal and set of books, was, after a competitive examination in organic chemistry, awarded to Mr. Maurice Goldfar.

ROCKEFELLER MEDICAL FELLOWSHIPS. — The Medical Research Council announce that on behalf of the Rockefeller Foundation they have made the following awards of Fellowships provided by the Foundation and tenable in the United States of America during the academic year 1928–29. These Fellowships are awarded to graduates who have had some training in research work either in the primary sciences of medicine or in clinical medicine or surgery, and who are likely to profit by a period of work at a university or other chosen centre in America before taking up positions for higher teaching or research in the British Isles:—

Leonard Ernest Bayliss, B.A., Ph.D. Camb., Sharpey scholar at University College, London.

Albert Victor Neale, M.D. Birm., M.R.C.P. Lond., resident medical officer, Children's Hospital, Birmingham.

Francis John Worsley Roughton, M.A., Ph.D. Camb., lecturer in physico-chemical aspects of physiology, University of Cambridge (appointed on special conditions while retaining emoluments from other sources.)

Dorothy Stuart Russell, M.B., B.S. Lond., research worker in the Baron Institute of Pathology, London Hospital.

Arthur Wormall, M.Sc. Leeds, lecturer in biochemistry, University of Leeds.

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE.—In the examinations of the Division of Tropical Medicine and Hygiene, at the end of this term, March–July, the following students passed with distinction:—

C. N. Griffin (winner of Duncan medal), M. C. Cairney, G. L. Chadha, C. D. Newman, and A. N. Sharma.

INTERNATIONAL MEDICAL POST-GRADUATE COURSES IN BERLIN.—The medical faculty of the University of Berlin, with the coöperation of the Lecturer's Association for Medical Continuation Courses and the Kaiserin Friedrich-Haus, which is an institution concerned with the post-graduate education of doctors, have arranged special courses for October, 1928. These will include a general course on pulmonary diseases, Oct. 1st–13th; a special course for nose, throat and ear specialists, Oct. 20th; and a course on pædiatrics, Oct. 15th–27th. A course on new methods in diagnosis and therapeutics with practical work in the wards and laboratories of the City Hospital, Friedrichshain, will also be held. Besides this special programme for October, short courses of two to four weeks and posts as guest-assistant in clinics, hospitals, and laboratories are available by arrangement. The courses are held in German, but many professors are able to lecture in other languages. Further information as to suitable lodgings, costs, and visits to clinics are obtainable from the Kaiserin Friedrich-Haus, 2–4, Luisenplatz, Berlin, NW 6.

THE SUPPLY OF MILK TO MOTHERS AND CHILDREN. The Minister of Health received, on July 24th, a deputation from the representatives of 12 metropolitan borough councils regarding the supply of milk for expectant and nursing mothers and children. The deputation was introduced by Mr. Thurtle, M.P., and Councillor Key, of Poplar, and Councillor Green, of Deptford, also spoke. They urged the reconsideration of letters recently issued by the Minister of Health which announced a reduction in the Exchequer grant for the supply of milk by maternity and child welfare authorities during the present financial year. The Minister said, in reply, that the reduction complained of had been made in view of the general need for economy. The only other way in which the necessary saving could be effected was to stop for the time being any further development of maternity and child welfare services, and it seemed preferable instead to make some reduction in the grants paid for the supply of milk. He was not insisting that local authorities should reduce their expenditure on milk, but had only intimated to them the maximum expenditure for this purpose which he could recognise for grant during the present year.

WELSH NATIONAL MEDICAL SCHOOL.—At a meeting held on July 24th at Bangor the Court of Governors of the University of Wales adopted the Draft Charter establishing the Welsh National Medical School as an independent school of the University. The Draft Charter will now be submitted to the Privy Council. Unfortunately the differences between the staff of the Cardiff Royal Infirmary and the authorities of the school have not yet been resolved. The Registrar of the University College of South Wales and Monmouthshire, of which College the school is still a constituent part, has informed present and prospective medical students that, until more complete arrangements have been made between the Hospital and the College authorities, students preparing for degrees and diplomas other than those given by the University of Wales cannot be accepted for courses of instruction in the final subjects.

PAYING PATIENTS AT RUGBY.—Five paying beds, two each for men and women, and one for children, are to be provided at St. Cross Hospital, Rugby. Subscribers with incomes between £300 and £700 a year, and their dependants, will pay £3 3*s.* per week for medical and surgical cases, and £4 4*s.* for complicated maternity cases. These fees will include attendance, ordinary hospital board, R.M.O.'s services, ordinary nursing, ordinary medicines, and ordinary surgical attendance. Non-subscribers will pay £2 2*s.* per week more under each heading. Minor operation fees will range from £3 3*s.* to £6 6*s.*, and major operation fees from £10 10*s.* to £15 15*s.*; the physicians' attendance fee will be a minimum of £3 3*s.*, with £1 1*s.* for each subsequent week.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—A special course in diseases of the chest will be held at the Brompton Hospital for one week beginning July 30th (fee, £3 3*s.*). From August 6th to Sept. 1st clinical and cystoscopic demonstrations will be undertaken by the staff at All Saints Hospital, on Mondays, Wednesdays, Thursdays, and Saturdays (fee, £2 12*s.* 6*d.*). Entrants should apply to the hospital for particulars of times. For those interested in infants diseases there will be a two weeks' course under Dr. Eric Pritchard's direction at the Infants Hospital from August 13th to 25th (fee £3 3*s.*). Visits will be paid to baby welfare clinics such as that at Thavies Inn, to the Blind Babies' Home, Chorley Wood, &c. The Queen Mary's Hospital staff will undertake an all-day "refresher" course from August 27th to Sept. 8th, consisting of demonstrations in all departments of medicine, surgery, and the specialties, designed especially for panel practitioners (fee, £3 3*s.*). There is also a general course arranged continuously throughout the year for which tickets are issued for periods varying from one week to 12 months. Information, syllabuses, tickets, and copies of the *Post-Graduate Medical Journal* may be had from the Secretary of the Fellowship at 1, Wimpole-street, London, W. 1.

THE ROYAL VICTORIA EYE AND EAR HOSPITAL, DUBLIN.—Last week the Governor-General opened the new wing of this hospital. The wing supplies accommodation for 40 additional patients, besides improving the accommodation for the staff. The funds were provided by the estate of the late Mrs. Harvey Lewis, who left a considerable sum of money to build a hospital in Dublin. As the sum was insufficient for this purpose the executors sought the direction of the Courts, and after hearing many suggestions Mr. Justice Meredith assigned the bequest to the Royal Victoria Eye and Ear Hospital for the extension. The hospital is now probably one of the largest and best equipped in the British Isles. Last year 2017 intern patients were admitted, and 13,863 were attended in the extern department.

STREET NOISES.—At a joint council meeting of the People's League of Health, held at 12, Stratford-place, London, on July 12th, a resolution was passed:—

That in view of the fact that eminent neurologists and mental experts have emphasised the grave effect on the nervous system of noises which tend to increase the incidence of functional mental and nervous disorders in our midst, this meeting urges upon the People's League of Health the desirability of calling the attention of the Government to the need for the control and diminution of preventable noises in our streets, and asks that the subject shall receive the serious attention of the Ministry of Health.

A letter embodying this request has been forwarded to the Minister of Health, who has been asked to receive a deputation consisting of Sir Farquhar Buzzard, Sir Maurice Craig, Sir Robert Armstrong-Jones, Sir James Purves-Stewart, Dr. A. F. Tredgold, Prof. G. Robertson, and Dr. Thomas Beaton.

METROPOLITAN HOSPITAL SUNDAY FUND.—At a meeting of the Council of this Fund, which was held at the Mansion House on July 20th, it was announced that the year's total collection amounted to £81,500. Of this sum £81,300 will be distributed among hospitals, institutions, dispensaries, and nursing associations of the metropolis. The collections in the churches and chapels this year were £2000 in excess of last year.

THE MERSEYSIDE HOSPITALS COUNCIL.—This is the name now adopted by the Hospitals Council of the Liverpool Penny-in-the-Pound Scheme—which has been revised and renamed. The body consists of the officers and life members, nominees of the voluntary medical institutions, the honorary medical staffs of the associated hospitals, representatives of organised labour, the employers' associations, the contributors, the local municipality and Boards of Guardians, the University of Liverpool, the British Medical Association, and the Health Insurance Committee. The income limit for manual workers has been abolished, but non-manual contributors, whose income exceeds the following limits, will be unable to secure free vouchers for service at the associated hospitals: single persons, £4 per week; married persons without families, £5 per week; married persons with families, £6 per week. Ministers of any place of worship contributing on Hospital Sunday will be entitled to recommend for a free letter of introduction to an associated hospital any member of their congregation who has not been in a financial position to contribute to the Penny-in-the-Pound fund. Full contributors' privileges will be extended to all genuinely unable to obtain work, and free letters of introduction will be issued to all cases so certified by the appropriate trade-union.

Medical Diary.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham.

MONDAY, July 30th.—2.30 to 5 P.M., Medical, Surgical, and Gynæcological Clinics. Operations.
TUESDAY.—2.30 to 5 P.M., Medical, Surgical, Throat, Nose and Ear Clinics. Operations.
WEDNESDAY, August 1st.—2.30 to 5 P.M., Medical, Skin, and Eye Clinics. Operations.
THURSDAY.—11.30 A.M., Dental Clinics. 2.30 to 5 P.M., Medical, Surgical, and Ear, Nose and Throat Clinics. Operations.
FRIDAY.—10.30 A.M., Throat, Nose and Ear Clinics. 2.30 to 5 P.M., Surgical, Medical, and Children's Diseases Clinics. Operations.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith, W.

MONDAY, July 30th.—10 A.M., Dr. Dowling: Skin Department. 11 A.M., Mr. Tyrrell Gray: Surgical Wards. 2 P.M., Mr. Simmonds: Surgical Out-patients.
TUESDAY.—10 A.M., Medical Registrar: Medical Wards. 2 P.M., Mr. Addison: Operations. 2 P.M., Dr. Shaw: Medical Out-patients.
WEDNESDAY, August 1st.—10 A.M., Dr. Owen: Medical Diseases of Children. 2 P.M., Dr. Scott Pinchin: Medical Out-patients. 2 P.M., Mr. Gibb: Eye Department.
THURSDAY.—10 A.M., Dr. Granger Stewart: Neurological Department. 2 P.M., Mr. Donald Armour: Operations. 2 P.M., Mr. MacDonald: Genito-Urinary Department.
FRIDAY.—10 A.M., Dr. Pritchard: Medical Wards. 12 noon, Dr. Ironside: Clinical Demonstration. 2 P.M., Mr. Sinclair: Surgical Out-patients.
SATURDAY.—9 A.M., Mr. Vlasto: Throat, Nose and Ear Operations. 10 A.M., Dr. Owen: Medical Diseases of Children.
Daily 10 A.M. to 5 P.M., Saturdays 10 A.M. to 1 P.M., Medical, Surgical, and Special Departments. Operations, Anæsthetic Course, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, London, W. 1.

MONDAY, July 30th, to SATURDAY, August 4th.—HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST (Brompton), Fulham-road, S.W. Special Course for one week. Fee £3 3*s.* Syllabus sent on request, as also those for Special Courses arranged for August to December inclusive.

Appointments.

COWELL, S. J., M.B., Ch.B. Camb., has been appointed to the newly instituted Chair of Dietetics, University of London.
GARLAND, H. G., M.B., Ch.B. Leeds, Demonstrator in Pathology and Bacteriology at the University of Leeds.
ROY, D. W., M.B., B.Ch. Cantab., F.R.C.S. Eng., Honorary Obstetric Surgeon to St. George's Hospital.

Westminster Hospital: MEACOCK, M. J., L.R.C.P. Lond.' M.R.C.S., and SWABY, E. E., L.R.C.P. Lond., M.R.C.S., Resident House Surgeons. HOWELLS, J. M., L.R.C.P. Lond., M.R.C.S.; KENDALL, A. W., M.B., B.S., M.R.C.S. Lond., L.R.C.P., Resident House Physicians.

Certifying Surgeons under the Factory and Workshop Acts: CAMPBELL, A. M., M.B., Ch.B. Glasg. (Islay, Argyll); CAMPBELL, T. H., M.B., Ch.B. Glasg. (Wishaw, Lanark); MACKAY, R., M.B., Ch.B. Aberd. (Beauly, Inverness); and THOMAS, G. L., M.B., Ch.B. Glasg. (St. Margaret's Hope, Orkney).

Vacancies.

For further information refer to the advertisement columns.

Bangor, Carnarvonshire and Anglesey Infirmary.—H.S. £200.

Birmingham, Birmingham and Midland Ear and Throat Hospital. 2nd H.S. At rate of £150.

Birmingham, Queen's Hospital.—Dental H.S. At rate of £50. Also Res. Anæsthetist. £70.

Blackburn County Borough.—Asst. Dentist. £475.

Bolingbroke Hospital, Wandsworth Common, S.W.—H.S. At rate of £120.

Bootle, Bootle Borough Hospital, Derby-road.—Sen. M.O. Also 2 Jun. M.O.'s. Each at rate of £150 and £125 respectively.

Bradford, Bradford Royal Infirmary.—Two H.S.'s. £150.

Brighton, Royal Sussex County Hospital.—H.S. £150.

Cambridge, Addenbrooke's Hospital.—H.P. At rate of £130.

Cardiff, Cardiff Royal Infirmary.—Three H.S.'s, three H.P.'s, and H.S. Gynæcological. Each at rate of £50. Also H.S. Ophthalmic. At rate of £75.

Central London Ophthalmic Hospital, Judd-street, St. Pancras, W.C.—Sen. H.S. £100.

Chester County Mental Hospital.—Fourth Asst. M.O. £350.

City of London Hospital for Diseases of the Heart, &c., Victoria Park, E.—H. P. At rate of £100.

Coventry, Coventry and Warwickshire Hospital.—Res. H.P. £125.

Delhi, Lady Hardinge Medical College.—Woman Professor of Physiology. Rs.500 a month.

Exeter, Royal Devon and Exeter Hospital.—H.S. At rate of £130.

Hertford, Hertford County Hospital.—H.P. At rate of £150.

Liverpool University.—George Holt Chair of Pathology. £1200.

London Hospital Medical College, Mile End, E.—Assistantship in the Department of Physiology. £100.

Manchester, Baguley Sanatorium.—Asst. M.O. £350.

Mildmay Mission Hospital, Austin-street, Bethnal Green, E.—Jun. Res. M.O. £100.

Newcastle-upon-Tyne, Wooley Sanatorium, near Hexham.—Asst. M.O. £350.

Newcastle-upon-Tyne, Hospital for Sick Children.—Hon. P. to Skin Dept.

Northampton, County Borough.—Asst. M.O. £600.

Richmond, Surrey, Royal Hospital.—Hon. Asst. Radiologist. Also Jun. H.S. £100.

Rotherham, Rotherham Hospital.—H.P. £180.

St. George's Hospital, Hyde Park Corner, S.W.—Pathologist and Lecturer in Pathology.

Scarborough, Scarborough Hospital and Dispensary.—Two H.S.'s. Each at rate of £120.

Society of Apothecaries of London.—Examiner in Midwifery.

Taunton, Taunton and Somerset Hospital.—Sen. House M.O. £150.

Wakefield, Clayton Hospital.—H.S. At rate of £150.

Wallasey, Victoria Central Hospital.—Jun. H.S. At rate of £100.

The Chief Inspector of Factories announces the following vacancies for Certifying Factory Surgeons: Melbourne (Derbyshire) and Poole (Dorsetshire).

Births, Marriages, and Deaths.

BIRTHS.

BALL.—On July 14th, at Crooms Hill, Greenwich, the wife of Dr. Norman D. Ball, of a daughter.

PENHALE.—On July 10th, at Moor House, West Bromwich, the wife of Dr. W. P. Penhale, of a daughter.

DEATHS.

DURHAM.—On July 16th, Frederic Durham, M.B., F.R.C.S., aged 87.

HEYWOOD SMITH.—On July 21st, at Chichester, Heywood Smith, M.A., M.D. Oxon., aged 90 years.

MOLYNEUX.—On July 16th, after a short illness, Echlin Storry Molyneux, M.R.C.S., L.R.C.P., of Siddington, Leamington Spa.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

INDEX TO "THE LANCET," VOL. I., 1928.

THE Index and Title-page to Vol. I., 1928, which was completed with the issue of June 30th, is now ready. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET, 1, Bedford-street, Strand, W.C. 2. Subscribers who have not already indicated their desire to receive Indexes regularly as published should do so now.

Notes, Comments, and Abstracts.

RHEUMATIC DISEASES:

THE TREATMENT OF UNDERLYING INFECTION, INCLUDING VACCINES, THEIR USE AND ABUSE.*

BY SIR WILLIAM WILLCOX, K.C.I.E., C.B., C.M.G., M.D., F.R.C.P. LOND.,

PHYSICIAN TO ST. MARY'S HOSPITAL, W.; MEDICAL ADVISER TO THE HOME OFFICE.

THE rheumatic diseases under consideration comprise: (1) acute and subacute rheumatism—the so-called "rheumatic fever"; (2) infective rheumatism, which includes:—

(*a*) Acute infective arthritis.

(*b*) Non-articular manifestations of chronic rheumatism in which the fibrous tissues are involved, such as fasciæ, aponeuroses, tendons, ligaments, bursæ, perineural tissues, bones, and periosteum (Heberden's nodes), fibrous deposits or thickenings of connective tissue (finger-pads, &c.). The comprehensive term "*fibrositis*" may be regarded as including all of these manifestations.

(*c*) "*Chronic arthritis*," or all forms of chronic rheumatism in which chronic joint changes occur, such as osteoarthritis, arthritis deformans, rheumatoid arthritis, chronic villous arthritis, &c. Forms of arthritis and fibrositis due to specific infections such as gonorrhœa, dysentery, tuberculosis, syphilis, &c., are excluded from consideration.

It will be universally admitted that an underlying infection is a most important ætiological factor in the causation of the rheumatic diseases under consideration. In most cases it is the primary causative factor.

Other ætiological factors play a part in the causation of rheumatic disease, such as defective hygienic conditions, an inadequate and improperly balanced dietary, hereditary diathesis, and so on. These may act by reducing the body resistance to infection, and they may predispose to the establishment of the underlying infection in the body.

The joint and connective tissue disorders which characterise rheumatic disease, whether it be rheumatic fever or one of the forms of chronic rheumatism, are not diseases per se, but are the local manifestations of the toxæmia of an underlying infection.

The proof of this statement is to be found in the other coexistent evidences of disease which accompany the rheumatic symptoms. Thus, in acute and subacute rheumatism, as was pointed out by the late Dr. W. B. Cheadle, the late Dr. David Lees, and Sir Thomas Barlow over 30 years ago, the joint symptoms are the least important part of the disease. Much graver manifestations of the disease were the heart complications such as pericarditis, myocarditis, endocarditis, the lung complications such as pleurisy and pneumonia, and the nervous complications such as chorea.

In chronic rheumatism, if carefully looked for, one always finds other evidence of the toxæmia besides the purely rheumatic symptoms, thus, a secondary anæmia is almost always present, and is accompanied by a general impairment of health, gastro-intestinal disorders, and other evidences of a toxæmia affecting different parts of the body.

(1) *Acute and Subacute Rheumatism.*

In childhood and pre-adult life the channel of the underlying infection appears to be the nasopharyngeal tract. Unhealthy tonsils are commonly found in the first attacks, and much evidence has been accumulated in recent years to prove the important part which infected tonsils play in the causation of acute and subacute rheumatism.

It has been my experience of hospital practice that one does not meet, to anything like the same extent to-day, with the virulent cases of rheumatic fever in children which were so common 30 years ago. Rheumatic hyperpyrexia rarely occurs at the present time, and the very severe cases of rheumatic fever in children are, I believe, much less common than formerly.

In my opinion, this improvement is largely due to the development of school hygiene and the medical supervision of children attending the elementary schools, whereby unhealthy conditions of the nasopharynx are recognised and receive, where necessary, appropriate medical and surgical treatment.

The improved sanitary conditions of houses, drainage, &c., and the care taken in refuse removal and disposal have also no doubt, played a part in reducing exposure to infection.

In acute and subacute rheumatism occurring in children during the pyrexial period, no special treatment is indicated for the underlying infection beyond the local treatment for

* A paper read at the Bath Conference on Rheumatic Diseases.

existing nasopharyngeal conditions, and the usual treatment with salicylates.

When the acute condition has subsided, and, provided that no cardiac or other complications contra-indicate, it is most important that any diseased condition of the nasopharynx should receive appropriate treatment. Thus unhealthy tonsils and adenoid tissue should be removed, and any disease of the accessory nasal sinuses should receive attention. The stumps of tonsils that have been imperfectly removed are often foci of infection, and may be responsible for recurring rheumatic attacks. These, if present, should receive careful examination, and be removed if found unhealthy.

When any gross focus of infection has undergone removal as far as possible, no further special treatment of the underlying infection is necessary if the patient remains in good health.

It must be remembered that other foci of infection exist in the nasopharynx besides the tonsils and accessory nasal sinuses, thus the whole of this surface area contains tubular glands which secrete mucus as one of their functions, and the submucous region contains numerous collections of lymphoid tissue.

The recurrence of acute and subacute rheumatism in children in whom the tonsils and adenoids have been efficiently removed is due, I believe, to a persisting infection in these glands and lymphoid collections. Surgical treatment is impossible in such cases, and vaccine treatment may be of value, in addition to local treatment by sprays, vapours, and gargles, &c.

Should rheumatic symptoms still recur in cases in which unhealthy tonsils and adenoids are not present, it is advisable for a swab of the nasopharyngeal area to be taken and bacteriologically examined. If a definite infection with a pathogenic streptococcus is found, vaccine treatment is often of value.

It must be remembered that streptococci of nasopharyngeal origin are often very toxic in character. It is, therefore, advisable to give only small doses of an autogenous vaccine of this type. A weak vaccine such as 2,000,000 per c.cm. may be prepared, and a graduated course of inoculations given in doses of 2, 3, 4, 5 minims at intervals of five days, and then weekly doses, the dose being increased by 1 minim weekly for three months.

It has been my experience that much better results are gained by the use of autogenous vaccines than with stock vaccine prepared from other cases.

In acute and subacute rheumatism *affecting adults*, often other foci of infection than the nasopharynx play a part.

Secondary infections of the intestinal tract are commonly present, and also the dental region is liable to infection.

In such cases a careful examination should be made for secondary foci of infection in other regions than the nasopharynx, and these should receive appropriate treatment.

Thus, infected teeth should be removed at such time as this can be safely effected. Intestinal infections may be treated advantageously by Plombières douches, colon irrigations, &c.

Bacteriological examination of the urine, &c., should be made, and any existing infection of the urogenital tract receive suitable treatment.

In the acute stage of rheumatic fever, whether in children or adults, vaccine treatment in my experience should be entirely avoided.

The use of salicylates in full doses, combined with appropriate alkali-producing drugs, is the safest and best remedy in this stage. Often where response to treatment is not immediate, an increase in the dosage of sodium salicylate brings about a cessation of the acute symptoms. In this procedure care is taken that symptoms of acidosis are not present, and that acetone and diacetic acid are absent from the urine.

In exceptional cases of true acute rheumatism in adults, where response to salicylate treatment is tardy, antistreptococcus serum of appropriate type may be given. It is wise that the initial dose should be quite small—e.g., 5 c.cm. subcutaneously. If no unpleasant symptoms result from this, a dose of 20 c.cm. may be given in six hours, and this may be followed by two or three further doses of 20 c.cm. at intervals of 24 hours respectively. Any danger from anaphylactic shock is avoided by giving the preliminary small dose. Serum should never be given if there is any danger of anaphylaxis, and is, therefore, avoided where a patient has had, on previous occasions, animal serum administered subcutaneously.

After a course of antistreptococcic serum has been given, no further doses are permissible, since, after an interval of a few days there would be danger of anaphylactic shock should any doses be repeated.

In adults there may be a tendency for the recurrence of acute and subacute rheumatism in spite of the adequate treatment of gross foci of infection, and of other therapeutic measures, such as medicinal and spa treatment.

In such cases it is advisable to carry out bacteriological investigations of a nasopharyngeal swab, stools, and intestinal washings, and the urine (catheter specimen). Usually a pathogenic streptococcal infection is found.

A course of vaccine treatment with an autogenous vaccine made of the pathogenic streptococci from the various sources is sometimes beneficial.

It is advisable to use a vaccine of weak strength, such as 5,000,000 per c.cm. for a preliminary course, giving doses such as 2, 3, 4, 5 minims at intervals of five days respectively, and afterwards weekly inoculations, the dose being increased by 1 minim each week.

If this course gives good results a further course of inoculations with a stronger vaccine (50,000,000 per c.cm.) may be given in weekly doses of 2, 3, 4, 5, 6, 7, 8, 9, 10 minims respectively.

Contra-indications to vaccine treatment in adult cases would be the presence of any existing gross focus of infection which could be removed with advantage, such as septic tonsils or septic teeth, also any evidence of sensitisation such as the occurrence of gout, urticarial eruptions or prurigo, angioneurotic œdema, asthma, &c.

(2) *Infective Rheumatism.*

(*a*) *Acute Infective Arthritis.*—The great majority of cases of infective rheumatism are of the chronic type. Sometimes, however, acute cases occur in which there is evidence of an acute toxæmia, such as marked and continued pyrexia, and definite symptoms of acute arthritis or fibrositis.

Complete rest is the first essential.

A careful investigation should be made to discover the presence of any foci of infection. In cases of this type an active infection always exists, and the most judicial consideration is necessary before active measures are taken for dealing with any removable foci.

When infected teeth are the cause of acute toxæmia and infective arthritis, it is usually advisable and necessary to remove these in the acute stage of the illness.

One of many similar cases that have been under my care may be quoted:—

The patient, male, aged 57, seen May 26th, 1925, had suffered for six weeks from painful and tender swelling of the joints, both hands and wrists. The right knee was swollen and painful, fluid being present in the joint. The elbows and shoulders were painful. The temperature had ranged from 100° to 103° F. for the whole period. There was no history of rheumatic fever, and the condition did not respond in the least to salicylates.

An autogenous streptococcal vaccine, and antistreptococcal serum had been tried without benefit.

An X ray examination of the teeth showed the presence of periodontitis, but no apical infection was present. No other focus of infection was present. Sir Frank Colyer saw this patient in consultation with me, and was of opinion that an acute periodontitis was present.

Removal of the remaining 15 teeth was decided upon. The condition of the patient was so serious that a general anæsthetic was unsafe. The teeth were removed three at a time under local anæsthesia, an interval of 10 days being allowed between the respective extractions.

It was necessary for all the teeth to be removed, since not until then did the pyrexia completely subside and the swelling of the joints disappear. This patient has remained quite well since his illness, and the joints have been normal.

In conditions of acute toxæmia and infective arthritis due to septic tonsils, removal of the tonsils in the acute stage of illness is impossible owing to the grave risk that would be involved of local sepsis or of acute streptococcal septicæmia.

In such cases large doses of antistreptococcal serum are of value. They should be given with the precautions already described.

When the acute toxæmia has subsided and the temperature has remained normal for a few weeks, the removal of the tonsils will usually be advisable owing to the risk of development of chronic rheumatism.

A case of acute toxæmia and infective arthritis due to acute pharyngitis has recently been under my care in St. Mary's Hospital.

The patient, male, aged 28, was taken ill with pyrexia on Nov. 25th, 1927, acute pain and swelling of the joints of the hands, wrists, knees, and ankles occurred, there were pain and limitation of movement of the hip- and shoulder-joints. The pharynx was red and inflamed. The temperature ranged from 99° to 101° F. for five weeks.

There was no history of rheumatic fever, and the condition did not respond to large doses of salicylates.

X ray examination of the teeth showed nothing abnormal. My colleague, Mr. W. H. Dolamore, found the teeth healthy on clinical examination. The tonsils and accessory nasal sinuses were found free from sepsis by my colleague Mr. Cecil Graham.

There was no evidence of urogenital infection. Bacteriological examination of the stools and urine gave a normal result. A marked infection with *Streptococcus viridans* was found in the pharyngeal swab, and an autogenous vaccine of strength 5,000,000 per c.cm. was prepared. On Dec. 22nd, 23rd, and 24th doses of 20 c.cm. antistreptococcal serum were given. On Dec. 28th the temperature fell to normal. On Dec. 29th vaccine

treatment was commenced, doses 1, 2, 3 minims being given at five-day intervals respectively, and afterwards weekly doses, the dose being increased by 1 minim each week.

On Jan. 14th the symptoms of pain and swelling of the joints had cleared up and the patient was discharged from hospital on Feb. 2nd, 1928, his joints and general condition being quite normal. The patient has resumed his work as chauffeur, and has been entirely free from any rheumatic symptoms.

"*Acute infective arthritis*" is really an acute toxæmia with acute arthritis as one of its manifestations. When recovery occurs from the acute toxæmia it is remarkable in many cases how completely the acute arthritis clears up, the joints becoming quite normal.

(*b*) *Chronic Rheumatism.*—In practically all cases of chronic fibrositis and chronic arthritis an underlying infection is present.

Careful search for the focus or foci of infection is the first step in treatment, and it is of the utmost importance that the relative significance of the various causal foci is appreciated when several are present. Sometimes the clinical symptoms are a guide. Thus, in cases of tonsillar and nasopharyngeal origin, there is a greater tendency for effusion into joints and tendon sheaths rather than for actual bony changes to occur. The joint symptoms may clear up to some extent and the improvement be followed by recurrences of the arthritis.

The tonsillar cases are more often seen in young people and are more likely to be associated with pyrexial periods.

Cases of intestinal origin are often associated with Heberden's nodes, and with bony changes and synovial proliferation—e.g., osteoarthritis and villous arthritis. The complexion is often sallow and a secondary anæmia is common. The colon is atonic and large, flatulent abdominal distension being present. The urine commonly contains a large excess of indican.

A careful clinical examination of the teeth, nasopharynx, gastro-intestinal tract, urogenital tract, should be supplemented by an X ray examination of the teeth and accessory nasal sinuses.

In some cases an X ray examination of the alimentary tract is advisable where diverticulitis, chronic appendicitis, cholecystitis, or intestinal stasis are suspected.

Bacteriological examination of the nasopharyngeal swab is of great value, since in the great majority of cases the causal organism is found in that region, often in almost pure culture. The teeth, tonsils, and antral discharges should be bacteriologically examined when operative measures have been carried out.

Bacteriological examination of the stools and also of the colon washings after an irrigation with normal saline are of value. In over 90 per cent. of cases of chronic arthritis under my care a streptococcus of the viridans group has been found in the stools. The streptococcal infection is, no doubt, in most cases secondary to a pre-existing dental or nasopharyngeal infection.

Search should be made for the non-lactose fermenting group of coliform organisms. These are known as the "parenteric group," and include *Bacillus asiaticus* and pseudo asiaticus, *Bacillus fæcalis alkaligenes* and pseudo fæcalis alkaligenes, bacillus of epidemic jaundice, bacillus morgan, the food poisoning group, such as *Bacillus aertrycke*, *Bacillus enteritidis* of Gaertner, &c.

I have found a parenteric intestinal infection associated with the streptococcal infection in an appreciable number of cases of chronic rheumatism, and I believe that this plays a part, perhaps a minor one, in the ætiology of these cases.

The combination of a streptococcus infection with a parenteric infection in the bowel may produce an enhanced pathological effect by symbiotic action. The close association and resemblance of the parenteric organisms with the bacillary dysentery group (which are well known to cause arthritis) is sufficient to call for careful attention.

Where a prostatic cause is suspected, prostatic massage is advisable before collecting a sample of urine for bacteriological examination.

Swabs from the vagina, cervix uteri, or uterus may require bacteriological examination if clinical symptoms suggest it.

In almost all cases of chronic rheumatism investigated in the bacteriological department of St. Mary's Hospital a streptococcus of the viridans group has been found, and this is sometimes accompanied by a hæmolytic streptococcus. The streptococcal organism must, I think, be regarded as the one usually responsible for the underlying infection.

The treatment of the underlying infection in chronic cases involves:—

1. Removal of gross foci of infection where this can be undertaken without risk or harm. Teeth showing periapical bone necrosis must be removed.

2. Where there is marked periodontal disease, or where dead teeth, or stumps, are present, or unerupted teeth, or dental cysts showing evidence of infection, careful consideration must be given to the question of radical surgical treatment.

3. When the rheumatic trouble is of a serious type, and where the evidence points to there being an important factor in causation, it is advisable for radical treatment to be carried out.

The proper procedure is, I think, to treat each case on its merits, and to arrive at a decision after considering all the points for and against surgical treatment. No hard-and-fast rules can be laid down for all cases.

The question of surgical treatment of unhealthy tonsils or tonsillar stumps must receive careful consideration. It should be carried out where the clinical type of the disease points to these as the causal factor. Where the rheumatic trouble is serious and persistent and no other important cause is found the indication for surgical treatment is strong and well founded.

Infected maxillary antra require adequate drainage by surgical measures, and infected accessory nasal sinuses may call for operative treatment.

Unhealthy conditions of the colon call for suitable treatment by means of special diet, Plombières douches, colon irrigations, or abdominal massage, &c.

The *underlying infection* can be further treated by measures taken which will raise the immunity of the body, thus *general measures* are of value such as suitable climatic conditions, artificial sunlight, a dietary which is well balanced and rich in nutritive vitamin-containing foods, the supplementing of endocrine deficiencies by administration of suitable doses of thyroid gland, &c.

Special Biological Measures.

Vaccine therapy.—Vaccines should not be given until the case has received the fullest clinical investigation, and any existing foci of infection received appropriate treatment.

An abuse of vaccine therapy is the administration of vaccines to cases of chronic rheumatism where obvious foci of infection are present—for example, septic teeth, septic tonsils, or infected antra. In such cases more harm than good must result.

Vaccines cannot raise the immunity where gross septic foci exist such as these, and they are likely to cause severe reactions and possibly complications such as urticarial eruptions, prurigo, &c.

Vaccines are contra-indicated where "sensitisation" to the toxins from the infection exists. Examples of this are recurring urticarial eruptions, prurigo, certain erythemata, gout, angioneurotic œdema.

In exophthalmic goitre, if associated with chronic rheumatism, vaccines may increase the symptoms of the thyroid disturbance and should be avoided. If nephritis is present, vaccines may cause an exacerbation of the renal symptoms and are dangerous.

If retinal vascular lesions of toxic origin are present in association with chronic rheumatism vaccine treatment is best avoided owing to the risk of further retinal damage.

Vaccines are of value in cases of chronic rheumatism where any gross focus of infection has been removed and where the toxic process is being carried on by the chronic infection of a mucous surface with its accompanying glandular tissue. Thus, in chronic intestinal or nasopharyngeal infections vaccine treatment may be used to supplement the other measures.

Complete bacteriological examination should be made of all the possible channels of infection and an autogenous vaccine prepared. This is usually one composed of streptococcal organism of the viridans group. The streptococci from different foci may with advantage be combined in suitable proportions.

For reasons already quoted it is advisable to commence with a vaccine of weak strength, say 5,000,000 per c.cm., and, after a preliminary course of this, to proceed with a stronger vaccine of, say, 50,000,000 per c.cm., giving carefully graduated doses. By this method of procedure unpleasant reactions are obviated, and the occurrence of harmful complications is guarded against.

Any evidence of symptoms of sensitisation are an indication for discontinuance of this line of treatment. In my experience effective immunisation is more readily obtained by carefully graduated doses of a weak vaccine than by giving the large doses advocated by some.

Where a parenteric intestinal infection exists in company with the streptococcal, and when a positive agglutination test is given by the patient's blood serum and the organism found, it is often advisable to give a short course of inoculations with the autogenous parenteric vaccine. This may be made of strength 50,000,000 per c.cm., and weekly doses of 2, 4, 6, 8, 10 minims given.

At the end of this course a further bacteriological examination of the stools should be made to determine if the infection still persists.

Stock streptococcal vaccines made from other patients are, in my experience, far inferior to autogenous vaccines, and are not recommended for use.

Antistreptococcal serum is not indicated in cases of chronic rheumatism.

Protein shock therapy, such as injection of peptone solution or of typhoid vaccine has, in my experience, been disappointing. In some cases, definite temporary improvement has occurred, but this has often been followed by a relapse into the former condition.

The Action of Vaccines in Chronic Rheumatism.

Properly graduated doses of an autogenous vaccine are of value in raising the immunity of the body to the causal toxæmia, and they, therefore, promote an improvement in the general condition of health.

The effect of an inoculation is to cause some local reaction in the affected joint. The increase in blood-supply consequent on this has a beneficial local effect. Vaccines are undoubtedly helpful in promoting absorption of inflammatory exudates. It cannot be claimed that they will effect improvement in the bony changes which have occurred in a damaged joint.

In some cases, such as old-standing osteoarthritis of the hip, vaccine treatment is undoubtedly of value in relieving pain and in checking the progress of the arthritis.

Vaccine treatment can with advantage be combined with other methods of treatment.

A BABIES CLUB.

AN infant welfare centre on a self-supporting basis has been opened at Stanley Cottage 35, Danvers-street, Paulton's-square, Chelsea. Dr. W. H. L. McCarthy, medical officer of health for Chelsea, is on the committee of management, and Dr. Harold Waller is medical officer to the centre. The object of this "Babies Club" is the instruction in the hygienic management of young children of mothers of the professional class who cannot afford repeatedly to call in a doctor for purposes of general supervision. Any mother wishing to bring her child to the club must first inform her family doctor of her intention and obtain his coöperation. Cases of illness discovered at the club will be referred back to him. Subscribers are not at liberty to ask the medical officer to attend their children in case of illness in their own homes; he can do so only at the request of their own doctor. Home visits by the nurse-superintendent are, however, covered by the subscription. The fee payable is five guineas per child for one year, or seven and a half guineas for two children in one family. The estimated expense of running the club is £750 per annum, and the estimated annual income, on the basis of one clinic a week and 150 members, is £787. There has been a steady increase in numbers since the club was opened in November last. The capital necessary to start the venture was provided from private loans, on which 5 per cent. income is to be paid if funds permit; it is hoped to repay the loans out of the funds of the club. £300 is still required for equipment and running expenses until the full complement of members is reached.

THE QUEEN'S NURSES IN IRELAND.

FOR some months past there has been anxiety among those interested in the admirable work of the Queen's nurses (better known as Jubilee nurses) in Ireland. Since the institution was founded about 40 years ago for the nursing of the sick poor in their own homes, the nurses in Ireland have been under the control of a Central Council meeting in Dublin, which was subordinate only to the Executive in London. All parts of Ireland have been represented on the Central Council, and no complaint has ever been made that partiality was shown toward one district rather than another. A few months ago, however, a sum of money raised in Northern Ireland to found a memorial to Queen Alexandra was offered to the Belfast Advisory Committee to extend the work of the nurses in Northern Ireland, on condition that a Council should be established for Northern Ireland entirely independent of the existing Council for Ireland. The proposal, warmly championed by Lady Londonderry, was opposed throughout the greater part of Ireland, and nowhere more determinedly than in some of the counties of Northern Ireland. After considerable controversy the proposal came before the Executive in London, which appointed a subcommittee, under the chairmanship of Sir William Hale-White, to inquire into the matter. The subcommittee took evidence in favour of and against the proposal, and has now reported against it. In the opinion of the subcommittee no one in the Irish Free State favoured the proposal, and many in Northern Ireland disliked it. The large majority of those interested in the work of the nurses in Ireland were definitely against a change. Moreover, the size of Northern Ireland would not justify the unnecessary expense of a Council, with offices and training establishment. The subcommittee has made certain suggestions in the endeavour to meet specific criticisms made by Lady Londonderry and her friends, hoping thereby to prevent any injury being done to the work of the nurses, which is universally appreciated. This will be the hope of many in Ireland who do not see why political divisions should be permitted to interfere with charitable activity.

ROYAL MEDICAL BENEVOLENT FUND.

AT the last meeting of the committee 37 applications for assistance were considered, and £520 16s. voted to 32 cases. As the holiday season approaches appeals come from widows and others asking for help towards the holiday expenses for children of medical men. An appeal is made to all who sympathise with the children's need during the summer holidays, to support this work of the Fund by sending subscriptions to the hon. treasurer, 11, Chandos-street, Cavendish-square, London, W. 1. The two following cases are quoted as an example:—

Mrs. X, whose husband, M.B. Lond., is now in a mental home as a free patient, has charge of three children. She has no income other than what she can make by needlework. The eldest child, a girl of 12, is educated by her godmother. The Fund pays the school fees for the son, age 9; the third child is at home. The applicant writes: "I had a breakdown in the middle of April and have been able to do so little work since that the seven weeks' summer holidays is rather a nightmare to me as regards finance." A grant of £7 10s. was voted.

M.R.C.S. who died in 1921, leaving five children, ages 12 to 4. One is at Epsom College, one at a girl's school, and three at orphanages. These children are dependent on relatives who are unable to contribute. Fund voted £15 for the children's holidays.

Other cases helped were:—

L.M.S.S.A. at the age of 70, who was in practice for 21 years, broke down in health in 1920. Ill health and ill luck followed each other. He is suffering from bronchitis and diabetes, and unable to work. He is entirely without means except the 15s. a week which his wife is able to make as a cook-housekeeper in some service flats. Voted £40.

L.R.C.P. & S., aged 72. The applicant is a widower, nearly blind with diabetes, and is confined to his bed. His income is the Old Age Pension £26 and Epsom Pension £40. Fund granted £25, making his total income £91; his rent for his room is £26.

L.R.C.P. & S. Edin., aged 68, whose wife is delicate, aged 66, had to give up his regular practice 24 years ago, since when he has worked as locum tenens. He has been handicapped by ill health, and during the last nine months has been unable to work and got into financial difficulties. Voted £40.

L.R.C.P. &. S., died in 1926 at the age of 39, leaving a widow and two infants ill provided for. The fund assisted the widow in 1927. In May, 1928, the widow died, leaving the two orphans, aged 8½ and 7½. Assistance was asked from the Fund. The case has been handed over to our Ladies' Guild to administer.

THE WELLCOME HISTORICAL MEDICAL MUSEUM.

THE souvenir programme issued in connexion with the visit paid by the African Society on July 11th to the Wellcome Historical Medical Museum takes the form of an attractive little book. This contains an illustrated catalogue, and an account of the inauguration ceremony in 1913, and of the speeches on Oct. 14th, 1926, when the reorganised and extended museum was reopened by Sir Humphry Rolleston. This is one of the permanent exhibitions in London that deserve a visit from doctors. The hall of primitive medicine and the alchemy room will appeal especially to those interested in ancient superstitions, while the development of pharmacy is neatly shown in the models of the chemist shops of different ages. Specimens, pictures, and statues are displayed in other rooms. The museum is at 54A, Wigmore-street, London, W.

A CONVENIENT HÆMOGLOBIN CHART.

WE have received from Messrs. Reed and Carnrick a handy hæmoglobin chart, which consists of a cardboard disc pinned by a paper clip to several layers of blotting-paper of larger diameter. These layers are separated from each other by grease-proof paper. The disc is divided into seven sectors of varying tints of red. If a drop of blood is placed on the filter paper, the chart may be rotated while the blood is still moist, until the colour is matched by one of the sectors which are numbered 10, 30, 50, 70, 80, 90, and 100, indicating the hæmoglobin percentage represented. When the first piece of blotting paper has been used it can be thrown away, and the next lower used when occasion demands. As a simple hæmoglobinometer this chart should be quite useful. It is unfortunate that the letterpress describing its mechanism claims rather too much. The suggestion is that the presence of mild, moderate, or severe anæmia can be determined merely by consulting the chart, whereas, of course, it is not so much the percentage of hæmoglobin, but the colour-index, which is the relation of hæmoglobin to the number of corpuscles in the blood to be tested, that gives a valuable indication of the type and degree of anæmia in any subject. There is no reason, however, why this hæmoglobinometer should not be as useful as more complex ones, provided it is not expected to take the place of a red cell count.